# Petroleum Hoses and AccessoriesBy KuriyamaDistributed ByDistributed By







#### **EDITION 0419**



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## What are Biofuel Friendly Products?







The Biofuel Friendly Products<sup>™</sup> logo indicates products which have compatible chemical resistance with all four types of fuels:

#### New alternative biofuels: Ethanol\* (up to E98) Biodiesel\* (up to B100) And traditional petroleum-based fuels: Gasoline Diesel

\*Meeting ASTM D5798, D4806 or D6751 criteria.

The absence of the **Biofuel Friendly Products™** logo by products in this catalog indicates those products are chemically compatible with traditional petroleum based fuels or oils, but not necessarily chemically compatible with the higher percentage blends of the new alternative biofuels. Refer to the Chemical Resistance Chart near the back of this catalog for more information by product series.

#### **Changing Fuels Create Challenges**

As we look to reduce our dependence on foreign petroleum based fuels, as well as reduce greenhouse gas emissions, the use of alternative biofuels such as ethanol and biodiesel continues to grow. This creates challenges in the fuel industry, as many existing petroleum transfer products were not designed with these alternative biofuels in mind.

That's why Kuriyama is proud to introduce **Biofuel Friendly Products™**, a complete package of revolutionary fuel transfer hoses, couplings and accessories. **Biofuel Friendly Products**<sup>™</sup> are specially engineered to resist the added strain caused by the ever-widening market use of the new high-percentage blends of biofuels – ethanol and biodiesel – while maintaining superior reliability transferring traditional petroleum based fuels – gasoline and diesel.

Look for the **Biofuel Friendly Products**<sup>™</sup> logo. Whenever you see it you can be confident that you are providing the best fuel transfer solutions!





## Tigerdrop<sup>™</sup> Clear

Drop Hose TDH<sup>™</sup> Series Clear - "See-the-flow"



#### **General Applications:**

• Tank truck gravity drop fuel transfer

#### **Construction:**

Polyurethane (TPU) tube with polyester fabric reinforcement, rigid PVC helix and embedded grounding wire.

#### Service Temperature Range:

-40°F (-40°C) to +140°F (+60°C)\*

#### Features and Advantages:

- **Biofuel Compatible** Revolutionary polyurethane compound! Specially designed to handle gasoline, ethanol<sup>\*\*</sup>, diesel and biodiesel<sup>\*\*</sup> — and still keeps all the other great features and benefits!
- Non-permeable polyurethane construction won't swell or become stiff like conventional TPR/rubber hoses. Long life reduces operating costs.
- Lightweight much lighter than conventional TPR/rubber hoses.
- **Superior flexibility** especially in sub-zero weather!





- **"See-the-flow" construction** for visual confirmation fuel is flowing.
- **Durable Construction** Designed with high tensile strength polyester yarn fabric reinforcement.
- **Grounding Wire** Durable multi-strand copper wire dissipates static electricity. Physically extract wire from the rigid helix and bond to the metal coupling (or by other means) to ground.<sup>†</sup>
- Easy Slide Helix Rigid counter clockwise helix design protects hose tube from cover wear; allows hose to slide easily over rough surfaces.
- Phthalate Free

Nominal Specifications											
Series	Series ID	D	OD^ Working Pressure (psi)			Vacuum Rating (in Hg)		Min Bending Radius	Stalluaru	Weight	
Number	(in)	(mm)	(in)	(mm)	68°F	104°F	68°F	104°F	(in at 68°F)	Length (ft)	(lbs/ft)
TDH202	2.02	51.3	2.66	67.6	75	40	Full	28	5	100/20	0.77
TDH303	3.03	77.0	3.78	96.0	70	35	Full	28	6	100/20	1.20
TDH404	4.04	102.6	4.82	122.4	65	30	Full	28	8	100/57/20	1.80

**NOTE:** Service life may vary depending on operating conditions and type of material being conveyed.

#### \*Actual service temperature range is application dependent.

\*\* Meeting ASTM D5798, D4806 or D6751 criteria.

^ OD measured over helix.

Δ

<sup>+</sup> Assembly Suggestions: Hose ID specifically designed for use with Kuriyama-Couplings™. Refer to Hose Assembly Coupling Installation Suggestions and Technical Bulletin on page 9 in this catalog.











#### Features and Advantages:

- **Specialty Rubber Compounds** Designed to handle gasoline, diesel, ethanol<sup>\*\*</sup> and biodiesel.<sup>\*\*</sup>
- **Durable Construction** Designed with high tensile strength polyester yarn fabric reinforcement.
- Easy to Handle Lighter weight and greater flexibility than conventional rubber drop hoses.<sup>‡</sup>

**Tigerdrop<sup>™</sup> NDH<sup>™</sup>** Drop Hose NDH<sup>™</sup> Series Black static dissipating tube

#### **General Applications:**

• Tank truck gravity drop fuel transfer

#### **Construction:**

Specially blended nitrile (NBR) rubber tube with polyester fabric reinforcement, rigid PVC helix and embedded grounding wire.

#### Service Temperature Range:

-10°F (-23.3°C) to +150°F (+65.5°C)\*

- Grounding Wire Durable multi-strand copper wire dissipates static electricity. Physically extract wire from the rigid helix and bond to the metal coupling (or by other means) to ground.<sup>†</sup>
- Static Dissipating Tube Specially formulated to help prevent the build-up of static electricity for added safety.
- Easy Slide Helix Rigid clockwise helix design protects hose tube from cover wear; allows hose to slide easily over rough surfaces.
- Phthalate Free

Nomina	Nominal Specifications										
Series	I	D	0	D^		rking Ire (psi)		uum (in Hg)	Min Bending Radius (in at 68°F)	Standard Length (ft)	Weight (lbs/ft)
Number	(in)	(mm)	(in)	(mm)	68°F	104°F	68°F	104°F			
NDH202	2.02	51.3	2.60	66.0	75	40	Full	27	5	100/20	0.80
NDH303	3.03	77.0	3.69	93.7	70	35	Full	27	6	100/20	1.24
NDH404	4.04	102.6	4.78	121.4	65	30	Full	27	8	100/57/20	2.00

### **Nominal Specifications**

NOTE: Service life may vary depending on operating conditions and type of material being conveyed.

\*Actual service temperature range is application dependent.

\*\* Meeting ASTM D5798, D4806 or D6751 criteria.

^ OD measured over helix.

+ Assembly Suggestions: Hose ID specifically designed for use with Kuriyama-Couplings™. Refer to Hose Assembly Coupling Installation Suggestions and Technical Bulletin on page 9 in this catalog.



## plastixs manufacturing solutions



## VAPR<sup>™</sup> Series

#### Heavy Duty Reinforced Vapor Recovery Hose

#### **General Applications:**

- Vapor recovery during terminal loading
- Vapor recovery for fuel delivery
- NOTE: Not intended for liquid fuel use

#### **Construction:**

Polyurethane (TPU) tube with polyester fabric reinforcement, rigid PVC helix and embedded grounding wire.

#### Service Temperature Range:

-40°F (-40°C) to +140°F (+60°C)\*

#### **Features and Advantages:**

- **Durable Reinforced Construction** Polyester reinforcement provides resistance against instances of hose tearing due to pulling or hanging. Well suited for demanding terminal use.
- Lightweight Provides durability similar to that of a drop hose, but in a lighter weight version.
- Cold-Flex<sup>™</sup> Materials Hose remains flexible in sub-zero temperatures.
- Transparent Construction Provides visual confirmation if fuel backs up into the vapor recovery system.



- Grounding Wire Multi-strand wire helps prevent the build-up of static electricity for added safety.<sup>+</sup>
- Easy Slide Helix Rigid helix design protects hose tube from cover wear, and allows hose to slide easily over rough surfaces.
- **Biofuel Compatible** Specially designed to handle gasoline, ethanol\*\*, diesel and biodiesel\*\* vapors.
- Non-permeable Construction Won't swell or become stiff like conventional rubber hoses. Provides for longer hose life and lower operating costs.
- Phthalate Free

Nominal Specifications											
Series	I	D	0	D^		Working Vacuum essure (psi) Rating (in Hg)				Standard	Weight
Number	(in)	(mm)	(in)	(mm)	68°F	104°F	68°F	104°F	(in at 68°F)	Length (ft)	(lbs/ft)
VAPR303	3.03	77.0	3.75	95.3	55	45	FULL	28	6	100/60	1.00
VAPR404	4.04	102.6	4.77	121.2	55	45	FULL	28	8	100/60	1.65

NOTE: Service life may vary depending on operating conditions and type of material being conveyed.

\*Actual service temperature range is application dependent.

\*\* Meeting ASTM D5798, D4806 or D6751 criteria.

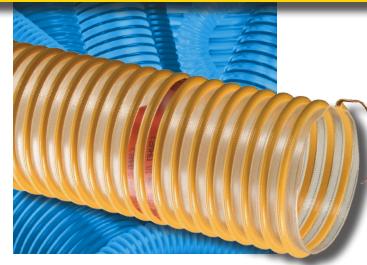
Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice.

<sup>^</sup> OD measured over helix.

<sup>†</sup> Refer to Hose Assembly Coupling Installation Suggestions and Technical Bulletin on page 9 in this catalog.











#### Features and Advantages:

- Lightweight much lighter than conventional TPR/rubber hoses.
- Superior flexibility especially in sub-zero weather!
- "See-through" construction for visual confirmation if fuel backs up into the vapor recovery system.
- Grounding Wire Durable multi-strand copper wire dissipates static electricity. Physically extract wire from the rigid helix and bond to the metal coupling (or by other means) to ground.<sup>†</sup>

Tigervapor™ **Vapor Recovery Hose TV<sup>™</sup> Series** 



#### **General Applications:**

Tank truck vapor recovery

#### **Construction:**

Polyurethane (TPU) tube with rigid PVC helix and embedded grounding wire.

#### Service Temperature Range:

-40°F (-40°C) to +140°F (+60°C)\*

- Easy Slide Helix Rigid counter clockwise helix design protects hose tube from cover wear; allows hose to slide easily over rough surfaces.
- Biofuel Compatible Revolutionary polyurethane compound! Specially designed to handle gasoline, ethanol\*\*, diesel and biodiesel\*\* vapors... and still keeps all the other great features and benefits!
- Non-permeable polyurethane construction - won't swell or become stiff like conventional TPR/rubber hoses. Long life reduces operating costs.

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Phthalate Free

Nominal Specifications											
Series		ID OD^		Working Pressure (psi)		Vacuum Rating (in Hg)		Min Bending Radius	Januaru	Weight	
Number	(in)	(mm)	(in)	(mm)	68°F	104°F	68°F	104°F	(in at 68°F)	Length (ft)	(lbs/ft)
TV202	2.02	51.3	2.46	62.5	17	6	21	12	3.0	100/60	0.51
TV303	3.03	77.0	3.57	90.7	11	5	18	10	3.5	100/60	0.78
TV404	4.04	102.6	4.61	117.1	9	4	13	8	4.5	100/60	1.10

**NOTE:** Service life may vary depending on operating conditions and type of material being conveyed.

\*Actual service temperature range is application dependent.

\*\* Meeting ASTM D5798, D4806 or D6751 criteria.

^ OD measured over helix.

<sup>↑</sup> Assembly Suggestions: Hose ID specifically designed for use with Kuriyama-Couplings™. Refer to Hose Assembly Coupling Installation Suggestions and Technical Bulletin on page 9 in this catalog.

Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice.

#### KPPCA0419





### **Tigervapor HD**<sup>™</sup> Vapor Recovery Hose TVHD<sup>™</sup> Series



#### General Applications:

Tank truck vapor recovery

#### **Construction:**

Polyurethane (TPU) tube with rigid PVC helix and embedded grounding wire.

Service Temperature Range:

-40°F (-40°C) to +140°F (+60°C)\*

#### Features and Advantages:

- Lightweight much lighter than conventional TPR/rubber hoses.
- Heavy duty construction thicker wall for longer hose life.
- "See-through" construction for visual confirmation if fuel backs up into the vapor recovery system.
- Grounding Wire Durable multi-strand copper wire dissipates static electricity. Physically extract wire from the rigid helix and bond to the metal coupling (or by other means) to ground.<sup>†</sup>





- Easy Slide Helix Rigid counter clockwise helix design protects hose tube from cover wear; allows hose to slide easily over rough surfaces.
- **Biofuel Compatible** Revolutionary polyurethane compound! Specially designed to handle gasoline, ethanol\*\*, diesel and biodiesel\*\* vapors... and still keeps all the other great features and benefits!
- Non-permeable polyurethane construction – won't swell or become stiff like conventional TPR/rubber hoses. Long life reduces operating costs.
- Phthalate Free

Nominal Specifications											
Series	I	D	OD^ Working Vacuun Pressure (psi) Rating (in			Min Bending Radius	Standard	Weight			
Number	(in)	(mm)	(in)	(mm)	68°F	104°F	68°F	104°F	(in at 68°F)	Length (ft)	(lbs/ft)
TVHD303	3.03	77.0	3.54	89.9	13	8	18	11	4.5	100/60	0.95
TVHD404	4.04	102.6	4.61	117.1	11	7	13	9	5.5	100/60	1.27

NOTE: Service life may vary depending on operating conditions and type of material being conveyed.

\*Actual service temperature range is application dependent.

\*\* Meeting ASTM D5798, D4806 or D6751 criteria.

^ OD measured over helix.

<sup>+</sup> Assembly Suggestions: Hose ID specifically designed for use with Kuriyama-Couplings™. Refer to Hose Assembly Coupling Installation Suggestions and Technical Bulletin on page 9 in this catalog.

## **Hose Assembly Coupling Installation Suggestions**

for Tigerflex<sup>™</sup> Series TDH<sup>™</sup> & NDH<sup>™</sup> Gasoline Drop Hoses & Series TV<sup>™</sup>, TVHD<sup>™</sup>, and VAPR<sup>™</sup> Gasoline Vapor Recovery Hoses using Tigerflex<sup>™</sup> Banding Sleeves or Banding Coils



Failure to properly couple a hose or ensure continuity can result in property damage and serious or life-threatening injury! Kuriyama of America, Inc. shall not be liable if you do not follow the procedures outlined below.

less than 10 ohms.

(connected) to ground through the metal coupler/fitting, or by other

means. A properly bonded/grounded hose assembly should measure

The person assembling the couplings to the hose should know how to

check the hose assembly for continuity by properly using a continuity

meter and/or an ohmmeter. Contact Kuriyama for training information.

For safety, Kuriyama of America, Inc. strongly suggests that any hose assembly used to transfer gasoline or gasoline vapors be bonded to ground before being put into service\*.

Tigerflex<sup>™</sup> Hose Series TDH<sup>™</sup>, NDH<sup>™</sup>, TV<sup>™</sup>, TVHD<sup>™</sup> and VAPR<sup>™</sup>. are manufactured with a stranded copper wire in the rigid PVC helix. The wire is to be physically extracted from the helix and bonded

Note: Visual inspections should be conducted on a regular basis to ensure the hose assembly's continued safety.

Step 1 — Prior to coupling, check the grounding/bonding wire in the cut length of hose with a continuity meter or ohmmeter (ohmmeter should read less than 10 ohms).



Step 2 — Using a sharp knife, cut the flex around the circumference of the hose approximately 2".



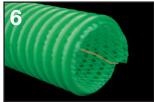
Step 3 — Using the knife, make a light cut around the entire circumference of the hose's rigid helix. Be careful not to cut too deeply into the helix, to avoid damaging the grounding wire. TIP: Cut all the way through the urethane (TDH, TV, TVDH, or VAPR) or nitrile (NDH) flex, but only score the underside of the helix.



Step 4 — Grasp the end of the hose's helix and carefully bend it back and forth until the helix snaps off. Be careful not to break the copper grounding wire.



Step 5 — Gently pull the broken end of the hose's helix off the copper wire. TIP: Pull with the curve of the helix.



Step 6 — Twist the copper grounding wire strands together and tuck the wire inside the hose.



Step 7 — Screw approximately 12" of banding sleeve onto the hose (use appropriate lubricant as needed). Or, thread the banding coil between the helixes onto the hose. Slip the banding clamps onto the hose. TIP: When using banding coils tighten clamps in a clockwise direction for TDH, TV, TVHD, and VAPR and counterclockwise direction for NDH, to better tighten down the hose on the coupling shank.



Step 8 — Insert the coupler's barbed shank into the hose, twisting counterclockwise for TDH, TV, TVHD, and VAPR and clockwise for NDH as it enters. For ease of installation, an appropriate lubricant may be used.



Step 9 — Insert the coupler into the hose until the hose seats against the bottom of the coupler.

Step 10 — Check continuity/ ohmmeter reading again, between the fittings on each end.



Step 11 — Install two hose clamps over the hose end above the coupling. When using banding coils, be sure to tighten clamps in a clockwise direction for TDH, TV, TVHD, and VAPR, and a counterclockwise direction for NDH, so the banding coils tighten down on the hose.

Step 12 — Check continuity/ ohmmeter reading again, between the fittings on each end of the hose assembly. The resistance should measure less than 10 ohms.





## **Banding Sleeves**

Flexible PVC Sleeves

- Helps prevent overbending near the coupling.
- Cut into approximately 12-inch lengths; screw onto hose at each end.



#### **SLV-DRP<sup>™</sup> Series**

- For TDH<sup>™</sup> and VAPR<sup>™</sup> Series hoses
- Green, non-food grade flexible PVC

Nominal Specifications								
Part Number	Fits Hose ID (in)	Color	Standard Length (ft)	Weight (Ibs/ea)				
SLV-DRP3X3	3.03	Green	3	3.06				
SLV-DRP4X3	4.04	Green	3	4.29				



#### SLV-VAP<sup>™</sup> Series

- For TV<sup>™</sup> and TVHD<sup>™</sup> Series hoses
- Yellow, non-food grade flexible PVC

Nominal S	pecifications

Part Number	Fits Hose ID (in)	Color	Standard Length (ft)	Weight (lbs/ea)					
SLV-VAP2X3	2.02	Yellow	3	1.80					
SLV-VAP3X3	3.03	Yellow	3	3.09					
SLV-VAP4X3	4.04	Yellow	3	4.20					



#### For NDH<sup>™</sup> Drop and Transfer Hoses • Gray, non-food grade flexible PVC

Nominal Specifications								
Part Number	Fits Hose ID (in)	Color	Standard Length (ft)	Weight (lbs/ea)				
SLV-NDH2X3	2.02	Gray	3	1.83				
SLV-NDH3X3	3.03	Gray	3	3.06				
SLV-NDH4X3	4.04	Gray	3	4.29				

## **Banding Coils** Rigid PVC Coils



- · Easy assembly.
- Provides smoother surface for banding behind coupler.
- Packaged singly: One piece to make one complete hose assembly coupled at each end.
- Cut one piece in half into two equal pieces; thread between hose helix.



#### For TDH<sup>™</sup> Drop and VAPR<sup>™</sup> Vapor Series Hoses

Nominal Specifications								
Part Number	Fits Hose	Color	Weight (lbs/ea)					
BCCF3	3.03	Clear	0.60					
BCCF4	4.04	Clear	0.90					



## For TV<sup>™</sup> and TVHD<sup>™</sup> Vapor Recovery Hoses

Nomina	Nominal Specifications												
Part Number	Fits Hose	Color	Weight (lbs/ea)										
BCYL2	2.02	Yellow	0.25										
BCYL3	3.03	Yellow	0.45										
BCYL4	4.04	Yellow	0.75										



#### For NDH<sup>™</sup> Drop and Transfer Hoses

Nomina	l Specifi	cations	
Part Number	Fits Hose	Color	Weight (Ibs/ea)
BCRT2	2.02	Gray	0.30
BCRT3	3.03	Gray	0.60
BCRT4	4.04	Gray	0.90

Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice.











#### **Features and Advantages:**

- Oil Resistant Polyurethane Tube Handles most fuels and oils. Excellent resistance to gasoline, diesel, ethanol, blends (up to E30) and biodiesels (up to B100).
- Abrasion Resistant Polyurethane Tube Solid polyurethane tube outlasts other materials when severe abrasion is a factor. Provides for longer hose life and lower operating costs versus rubber or PVC hoses.

## Oil Vac<sup>™</sup> OV<sup>™</sup> Series Heavy Duty Oil Resistant Polyurethane Suction Hose



#### **General Applications:**

- Material chutes
- Material handling heavy duty abrasive
- Oil suction heavy duty

#### **Construction:**

Polyurethane tube with rigid PVC helix.

#### Service Temperature Range:

-40°F (-40°C) to +150°F (+65°C)\*

- **Transparent Construction** "See-the-flow." Allows for visual confirmation of material flow.
- "Cold-Flex" Materials Hose remains flexible in sub-zero temperatures.
- Phthalate Free

Nomina	Nominal Specifications														
Series Number	ID	ID	OD	OD		king re (psi)	Vacuum Rating (in Hg)		Min. Bending	Standard Length	Weight				
Number	(in)	(mm)	(in)	(mm)	68°F	104°F	68°F	104°F	Radius (in at 68°F)	(ft)	(lbs/ft)				
0V100	1	25.4	1.26	32.0	85	60	28	26	3	100	0.23				
0V125	1 1/4	31.7	1.49	37.8	85	60	28	24	5	100	0.30				
0V150	1 1/2	38.1	1.76	44.6	70	50	28	24	5	100	0.35				
0V200	2	50.8	2.32	59.0	65	45	28	24	7	100	0.55				

NOTE: Service life may vary depending on operating conditions and type of material being conveyed.

NOTE: For details of the following compliances, refer to footnotes listed on page 62 of the Tigerflex<sup>™</sup> Industrial Hose Catalog.

\*Actual service temperature range is application dependent.



Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice. KPPCA0419





## ORV<sup>™</sup> Series Heavy Duty Oil Resistant PVC Suction Hose

#### **General Applications:**

- Environmental cleanup
- Oil skimming
- Oil slurries
- Oil suction
- Vapor recovery hydrocarbon emissions

#### **Construction:**

Oil resistant PVC tube with rigid PVC helix.

#### Service Temperature Range:

+5°F (-15°C) to +150°F (+65°C)\*

#### Features and Advantages:

• **Oil Resistant PVC Tube** – Made with special oil resistant compounds which exhibit medium resistance to oil and other hydrocarbons.





- Smooth Outer Cover Provides increased pressure rating and smooth surface for banding.
- Phthalate Free

Nomina	Nominal Specifications													
Series	ID	ID	OD	OD	Wor Pressu	king re (psi)	Vacuum Rating (in Hg)		Min. Bending	Standard	Weight			
Number	(in)	(mm)	(in)	(mm)	68°F	104°F	68°F	104°F	Radius (in at 68°F)	Length (ft)	(lbs/ft)			
0RV075	3/4	19.0	1.01	25.6	100	60	28	26	3	100	0.19			
0RV100	1	25.4	1.26	32.0	80	50	28	26	3	100	0.24			
ORV150	1 1/2	38.1	1.76	44.6	60	40	28	24	5	100	0.35			
0RV200	2	50.8	2.32	59.0	60	40	28	24	7	100	0.55			
0RV300	3	76.2	3.41	86.7	65	40	28	22	10	100	1.09			

NOTE: Service life may vary depending on operating conditions and type of material being conveyed.

NOTE: For details of the following compliances, refer to footnotes listed on page 62 of the Tigerflex™ Industrial Hose Catalog.

\*Actual service temperature range is application dependent.

#### Phthalate Free<sup>(09)</sup>, RoHS<sup>(10)</sup>









USA

#### Features and Advantages:

• Oil Resistant PVC – Made with special oil resistant compounds which exhibit medium resistance to oil and other hydrocarbons.

## WOR<sup>™</sup> Series Heavy Duty Oil Resistant PVC Suction Hose

#### General Applications:

- Environmental clean-up
- Oil skimming
- Oil slurries
- Oil suction
- Vapor recovery hydrocarbon emissions

#### **Construction:**

Oil resistant PVC tube with rigid PVC helix.

#### Service Temperature:

+5°F (-15°C) to +150°F (+65°C)\*

- Convoluted Outer Cover Provides increased hose flexibility.
- Phthalate Free

Nomina	Nominal Specifications														
Series ID Number (in)		ID	<b>OD</b>	OD	Wor Pressu	king re (psi)	Vacuum Rating (in Hg)		Min. Bending Radius	Standard Length	Weight				
Number	(in)	(mm)	(in)	(mm)	68°F	104°F	68°F	104°F	(in at 68°F)	(ft)	(lbs/ft)				
W0R150	1 1/2	38.1	1.92	48.8	50	25	28	24	3	100	0.31				
W0R200	2	50.8	2.40	61.0	40	20	28	24	4	100	0.50				
W0R300	3	76.2	3.64	92.5	40	20	28	24	6	100	1.17				
W0R400	4	101.6	4.72	119.9	35	18	28	22	10	100	1.74				

NOTE: Service life may vary depending on operating conditions and type of material being conveyed.

**NOTE:** For details of the following compliances, refer to footnotes listed on page 62 of the Tigerflex<sup>TM</sup> Industrial Hose Catalog. **\*Actual service temperature range is application dependent.** 



Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice. KPPCA0419

## **Kuri Tec**®



#### K9593 Series

#### High Pressure Oil Resistant Wire and Yarn Reinforced Suction and Discharge Hose

#### **General Applications:**

- Batch plants
- Constant flex applications
- Liquid chemical handling<sup>†</sup>
- Mining applications (MSHA)
- Oil field water hauling
- Suction & discharge of water and slurries
- Tank trucks
- Transfer of petroleum and other oil based products

**Construction:** Clear phthalate free PVC/polyurethane blended core, galvanized steel wire helix, high tensile strength yarn reinforcement and black phthalate free PVC/polyurethane blended cover.

Service Temperature Range: -5°F (-20°C) to +150°F (+65°C)\*

#### **Features and Advantages:**

- Food Grade Materials Hose complies with applicable FDA requirements.
- **Increased Pressure Rating** New heavy duty construction resulting in a highly durable product, designed for both indoor and demanding outdoor applications.
- **Superior Flexibility** More flexible than other similar hoses for ease-of-use.
- **High Cycle Strength** Designed to resist damage from constant flex applications.
- Abrasion Resistant Cover Resists wear from being dragged on rough surfaces.
- **Static Dissipative –** Steel wire helps prevent the build-up of static electricity for added safety (see below <sup>+†</sup>).
- Oil Resistant Meets ARPM Class A (High oil resistance) rating.
- **MSHA Accepted** Cover material accepted by MSHA as having met the requirements for acceptance of flame-resistant solid products taken into mines for hoses transferring air, oil, water or other fluids.
- Phthalate Free

NOMI	Nominal Specifications													
Series	Size	Nomi	nal ID	Nomi	nal OD	Working Pressure (psi)	Vacuum Rating	Min. Bend	Standard	Weight Per				
Number	Code	(in)	(mm)	(in)	(mm)	at 70°F (20°C)	(in Hg) at 70°F (20°C)	Radius (in) at 70°F (20°C)	Length (ft)	Pkg. (lbs)				
K9593	24	1.50	38.1	2.03	51.6	300	29.9	5.5	50/100	45/90				
K9593	32	2.00	50.8	2.57	65.3	275	29.9	7.0	50/100	62/124				
K9593	40	2.50	63.5	3.07	78.0	150	29.9	9.0	50/100	79/158				
K9593	48	3.00	76.2	3.57	90.7	150	29.9	11.0	50/100	90/180				

Note: Working Pressure decreases as temperature increases. Pressure ratings can only be obtained with proper coupling procedures. Use of compression fitting with Kuri Tec<sup>®</sup> reinforced hose is not recommended. Hose claims involving use of these fittings will be disallowed.

<sup>++</sup> Caution: This product is designed to help dissipate static electricity when the metal wire is properly connected to ground through the fitting or other means. <sup>+</sup> Caution: Consult Kuri Tec<sup>®</sup> PVC chemical resistance guide for suitability.

\* Actual service temperature range is application dependent. Working pressure decreases as temperature increases.

Note: For details of the following compliances, refer to page 63 of the Kuri Tec catalog.

#### FDA<sup>(03)</sup>, MSHA<sup>(08)</sup>, Phthalate Free<sup>(15)</sup>, RoHS<sup>(16)</sup>

Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice.













#### **Features and Advantages:**

Nominal Specifications

- Food Grade Hose complies with FDA and NSF requirements.
- **Oil Resistant** Specially formulated to remain flexible when exposed to oils. Won't dry out and crack like other PVC hoses. Meets ARPM Class A rating for oil resistance.
- Crystal Clear See-the-flow. Allows for visual confirmation of product flow.

## **Kuri Tec**®

## **POLYSPRING® OIL &** K7560 Series

#### Oil Resistant Food & Beverage Vacuum/Transfer Hose

#### **General Applications:**

- Full vacuum linesFood oil processing
- Industrial vacuum pumps
- Coolant lines
- Vegetable oil filtration/ recycling
- Automotive transmission fluids
- Petroleum oil transfer

**Construction:** Clear oil resistant phthalate free PVC compound formulated with ingredients in compliance with applicable FDA<sup>(03)</sup> requirements. Meets NSF<sup>(13)</sup> and RoHS<sup>(16)</sup> criteria. Reinforced with helically-wound spring steel wire.

#### Service Temperature Range:

+25°F (-4°C) to +150°F (+65°C)\*

- **Glass-smooth Interior** Reduces possibility of material buildup and ensures smooth flow of material.
- **Grounding Wire** Electrogalvanized steel wire can be used for static dissipation (see below<sup>††</sup>).
- Non-marking Eliminates instances of floor marking that can be caused by some rubber hoses.
- Phthalate Free

Series	Size	Nominal ID		Nominal OD		Working Pressure (psi)		Vacuum	Min. Bend	Standard	Weight per			
Number	Code	(in)	(mm)	(in)	(mm)	at 70°F (20°C)	at 122°F (50°C)	Rating (in Hg) at 70°F (20°C)	Radius (in) at 70°F (20°C)	Length (ft)	Pkg. (lbs)			
K7560	08	1/2	12.7	0.750	19.1	100	70	29.9	2	50/100	8/16			
K7560	12	3/4	19.1	1.031	26.2	70	50	29.9	3	50/100	12/24			
K7560	16	1	25.4	1.297	32.9	70	35	29.9	4	50/100	16/32			
K7560	20	1 1/4	31.8	1.609	40.9	70	35	29.9	5	50/100	27/54			
K7560	24	1 1/2	38.1	1.860	47.2	50	30	29.9	6	50/100	31/62			
K7560	32	2	50.8	2.391	60.7	50	30	29.9	8	50/100	44/88			
K7560	40	2 1/2	63.5	3.000	76.2	50	30	29.9	10	50	72			
K7560	48	3	76.2	3.500	88.9	50	30	29.9	12	50	84			

Note: Working Pressure decreases as temperature increases. Pressure ratings can only be obtained with proper coupling procedures. Use of compression fitting with Kuri Tec<sup>®</sup> reinforced hose is not recommended. Hose claims involving use of these fittings will be disallowed.

<sup>†</sup> Caution: Consult Kuri Tec® PVC chemical resistance guide for suitability.

<sup>++</sup>**Caution:** This product is designed to help dissipate static electricity when the metal wire is properly connected to ground through the fitting or other means. **Note:** For details of the following compliances, refer to page 63 of the Kuri Tec catalog.

#### FDA<sup>(03)</sup>, NSF<sup>(13)</sup>, Phthalate Free<sup>(15)</sup>, RoHS<sup>(16)</sup>

Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice.

## Petroleum



## **T955AA Series**

300 PSI DEF Dispensing Hose For Diesel Exhaust Fluids



#### **General Applications:**

- Used to convey the high-purity, aqueous urea solution called DEF (Diesel Exhaust Fluid)
- Diesel Exhaust Fluid/Urea solution dispensing and transfer hose.
- Used to provide a "clean burn" for diesel engines and their SCR systems.
- Dispensing hose for bulk transfer systems, skids, bulk storage, process equipment, DEF blending.
- Dispensing equipment systems, transfer carts, DEF station pumps, drum filling, portable dispensers, mobile filling trailers, DEF fuel trailers.
- Portable dispensing systems for mobile equipment, buses, trucks, transportation, agricultural and construction sites.

#### **Construction:**

Tube: Black conductive Sulphur-free EPDM.

Reinforcement: High tensile textile braids.

**Cover:** Black conductive EPDM-abrasion and ozone resistant.

**Note:** Couplings Recommendation - SS material to avoid contamination of the DEF solution.

Service Temperature Range:

-40°F (-40°C) to +212°F (+100°C)

#### Branding:

ALFAGOMMA ITALY 955 20 bar (300 psi) DEF/ AUS32 DISPENSING  $\Omega$  (in purple letters)

Nominal	Nominal Specifications													
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Min. Bending Radius (in at 68°F)	Standard Length (ft)	Weight (Ibs/ft)						
T955AA050	1/2	13	0.91	23	300	3.58	100/200	0.19						
T955AA062	5/8	16	1.02	26	300	4.41	100/200	0.23						
T955AA075	3/4	19	1.14	29	300	5.24	100/200	0.26						
T955AA100	1	25	1.38	35	300	6.89	100/200	0.33						



## **ALFACOMMA®**

## Petroleum



STEEL

## **6C5AA Series**

150 PSI Corrugated Tank Truck Hose



#### **General Applications:**

For suction and discharge applications in truck and tank car transfer of gasoline, oil and other petroleum-based products with up to 50% aromatic content.

#### **Construction:**

**Tube:** Black Conductive NBR. **Reinforcement:** High tensile textile cords with flexible steel helix wire.

**Cover:** Black corrugated CR – abrasion, ozone, and hydrocarbon resistant.

#### Service Temperature Range:

-22°F (-30°C) to +176°F (+80°C)

Working Pressure: Constant Pressure – 10 Bar (150 psi)

#### **Branding:**

ALFAGOMMA – ITALY T6C5 10 BAR (150 PSI) PETROLEUM TANK TRUCK (in red letters)

Nomir	Nominal Specifications													
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Vacuum HG (in)	Min. Bending Radius (in at 68°F)	Standard Length (ft)	Weight (lbs/ft)					
6C5AA200	2	51	2.48	63	150	30	4	100	0.85					
6C5AA300	3	76	3.44	90	150	27	6	100	1.57					
6C5AA400	4	102	4.57	116	150	27	8	100	2.21					
6C5AA600	6	152	6.54	166	150	27	12	20	3.59					

#### **COUPLING SUGGESTIONS**

Quick-Acting couplings or combination nipples attached with bands.

★ Kuriyama offers a full line of Quick-Acting couplings, pin lug shank couplings and combination nipples. Refer to current Kuriyama-Couplings<sup>™</sup> and Accessories Catalog for type and pricing.

Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice.

KPPCA0419

## Petroleum *Alfagomma*



STEE

### **T605AA Series 150 PSI Black Petroleum**

S & D Hose



#### **General Applications:**

For suction and discharge applications in truck and tank car transfer of gasoline, oil and other petroleum-based products with up to 50% aromatic content.

#### **Construction:**

Tube: Black conductive NBR.

Reinforcement: High tensile textile cords with flexible steel helix wire.

Cover: Black CR - abrasion, ozone and hydrocarbon resistant.

#### Service Temperature Range:

-22°F (-30°C) to +176°F (+80°C)

#### Working Pressure: Constant Pressure - 10 Bar (150 psi)

#### Branding:

ALFAGOMMA – ITALY T605 – 10 BAR (150 PSI) PETROLEUM – S & D Ω - SAE 100R4 (in red letters)

#### T605 IS NOT RECOMMENDED FOR USE ON A REEL.

Nominal S	Specific	cations							
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Vacuum HG (in)	Min. Bending Radius (in at 68°F)	Standard Length (ft)	Weight (lbs/ft)
T605AA075	3/4	19	1.14	29	150	30	3	100	0.41
T605AA100	1	25	1.38	35	150	30	4	100	0.52
T605AA125	1 1/4	32	1.65	42	150	30	5	100	0.61
T605AA150	1 1/2	38	1.89	48	150	30	6	100	0.71
T605AA200	2	51	2.40	61	150	30	8	100	0.91
T605AA250	2 1/2	63	2.95	75	150	27	10	100	1.42
T605AA300	3	76	3.54	90	150	27	12	100	1.75
T605AA400	4	102	4.65	118	150	27	16	100	2.56
T605AA600	6	152	6.69	170	150	24	24	100/20	4.95
T605AA800	8	203	8.86	225	150	21	32	20	7.87

#### COUPLING SUGGESTIONS

Quick-Acting, combination nipples attached with bands or clamps or internally expanded couplings with gasket seal attached with ferrules.

Kuriyama offers a full line of Quick-Acting couplings, pin lug shank couplings and combination nipples. Refer to current Kuriyama-Couplings<sup>™</sup> and Accessories Catalog for type and pricing. Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice. 18

KPPCA0419



## **BALFACOMME**

## Petroleum



## **T605AH Series**

150 PSI Red Petroleum S & D Hose

#### **General Applications:**

For suction and discharge applications in truck and tank car transfer of gasoline, oil and other petroleum-based products with up to 50% aromatic content.

#### **Construction:**

Tube: Black conductive NBR.

**Reinforcement:** High tensile textile cords with flexible steel helix wire.

**Cover:** Red CR – abrasion, ozone and hydrocarbon resistant.

#### Service Temperature Range:

-22°F (-30°C) to +176°F (+80°C)

Working Pressure: Constant Pressure – 10 Bar (150 psi)

#### **Branding:**

ALFAGOMMA – ITALY T605 – 10 BAR (150 PSI) PETROLEUM – S & D (in yellow letters)

T605 IS NOT RECOMMENDED FOR USE ON A REEL.

Nomin	Nominal Specifications													
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Vacuum HG (in)	Min. Bending Radius (in at 68°F)	Standard Length (ft)	Weight (lbs/ft)					
T605AH150	1 1/2	38	1.89	48	150	30	6	100	0.73					
T605AH200	2	51	2.40	61	150	30	8	100	0.94					
T605AH300	3	76	3.46	88	150	27	12	100	1.74					
T605AH400	4	102	4.57	116	150	27	16	100	2.41					

#### **COUPLING SUGGESTIONS**

Quick-Acting, combination nipples attached with bands or clamps or internally expanded couplings with gasket seal attached with ferrules.

★ Kuriyama offers a full line of Quick-Acting couplings, pin lug shank couplings and combination nipples. Refer to current Kuriyama-Couplings<sup>™</sup> and Accessories Catalog for type and pricing.

## Petroleum *Ba*lfagomma®



STEEL

## **T606AE Series**

**150 PSI Corrugated** Petroleum S & D -**Arctic Hose** 





#### **General Applications:**

For suction and discharge applications in truck and tank car transfer of gasoline, oil and other petroleum-based products with up to 50% aromatic content. Where extreme flexibility is needed in low temperature.

#### **Construction:**

Tube: Black conductive NBR.

**Reinforcement:** High tensile textile cords with flexible steel helix wire.

Cover: Blue corrugated - abrasion, ozone and hydrocarbon resistant.

#### Service Temperature Range: -65°F (-54°C) to +180°F (+82°C)

Working Pressure: Constant Pressure - +150 psi

#### **Branding:**

ALFAGOMMA - ITALY T606 - 10 BAR (150 PSI) PETROLEUM – S & D Arctic (in blue letters on vellow layline)

Nominal Specifications													
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Vacuum HG (in)	Min. Bending Radius (in at 68°F)	Standard Length (ft)	Weight (Ibs/ft)				
T606AE200	2	51	2.48	63	150	30	3	100	1.06				
T606AE300	3	76	3.54	90	150	30	4 1/2	100	1.84				
T606AE400	4	102	4.57	116	150	30	6	100	2.67				

#### **COUPLING SUGGESTIONS**

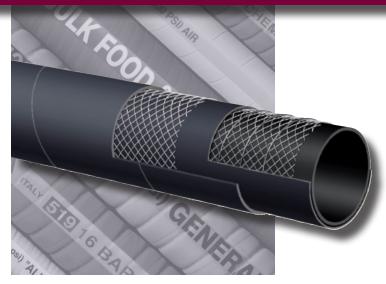
Quick-Acting, combination nipples attached with bands or internally expanded brass couplings with gasket seal attached with ferrules.

Kuriyama offers a full line of Quick-Acting couplings, pin lug shank couplings and combination nipples. Refer to current Kuriyama-Couplings™ and Accessories Catalog for type and pricing.



## **BALFACOMMA®**

## Petroleum



WIU STEEL

## **T620AA Series**

300 PSI Black Fuel & Oil S & D Hose

#### **General Applications:**

Fuel and oil suction and discharge for up to 50% aromatic content. Designed for heavy duty applications.

#### **Construction:**

Tube: Black conductive NBR.

**Reinforcement:** High tensile textile cords with steel helix wire and static wire.

**Cover:** Black conductive CR – abrasion, ozone and hydrocarbon resistant.

#### Service Temperature Range:

-22°F (-30°C) to +176°F (+80°C)

Working Pressure: Constant Pressure – 20 Bar (300 psi)

#### **Branding:**

ALFAGOMMA – ITALY T620 – 20 BAR (300 PSI) PETROLEUM – S & D  $\Omega$  (in red letters)

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Nomin	Nominal Specifications										
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Vacuum HG (in)	Min. Bending Radius (in at 68°F)	Standard Length (ft)	Weight (Ibs/ft)		
T620AA200	2	51	2.48	63	300	30	8	100	1.10		
T620AA300	3	76	3.54	90	300	27	12	100	1.77		
T620AA400	4	102	4.57	116	300	27	16	100	2.43		
T620AA600	6	152	6.69	170	300	24	24	100/20	5.60		
T620AA800	8	203	8.86	225	300	21	32	20	9.24		

#### **COUPLING SUGGESTIONS**

Quick-Acting, combination nipples attached with bands or clamps or internally expanded couplings with gasket seal attached with ferrules.

★ Kuriyama offers a full line of Quick-Acting couplings, pin lug shank couplings and combination nipples. Refer to current Kuriyama-Couplings<sup>™</sup> and Accessories Catalog for type and pricing.

## Petroleum *Ba*lfagomma®

S

## **T629AA Series**

**150 PSI Black Biofuel Petroleum S & D Hose** 





#### **General Applications:**

For suction and discharge applications in truck and tank car transfer of gasoline, oil and Biofuels - up to E98 and B100\* with up to 60% aromatic content at ambient temperature.

#### **Construction:**

Tube: Black conductive synthetic rubber.

**Reinforcement:** High tensile textile cords with steel helix wire.

Cover: Black specially-blended neoprene added resistance against abrasion, ozone and hydrocarbons.

#### Service Temperature Range:

-22°F (-30°C) to +176°F (+80°C)

#### Working Pressure: Constant Pressure – 10 Bar (150 psi)

**Branding:** ALFAGOMMA - ITALY T629 - 10 BAR (150 PSI) BIOFUEL  $\Omega$  (in green letters)

\*Applies to Biodiesels which meet the ASTM D6751 criteria.

**T629 IS NOT RECOMMENDED FOR USE ON A REEL** 

Nominal Specifications										
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Vacuum HG (in)	Min. Bending Radius (in at 68°F)	Standard Length (ft)	Weight (Ibs/ft)	
T629AA075	3/4	19	1.14	29	150	30	3	100	0.41	
T629AA100	1	25	1.38	35	150	30	4	100	0.51	
T629AA150	1 1/2	38	1.89	48	150	30	6	100	0.71	
T629AA200	2	51	2.40	61	150	30	8	100	0.91	
T629AA250	2 1/2	63	2.95	75	150	27	10	100	1.42	
T629AA300	3	76	3.46	88	150	27	12	100	1.71	
T629AA400	4	102	4.57	116	150	27	16	100	2.38	

#### **COUPLING SUGGESTIONS**

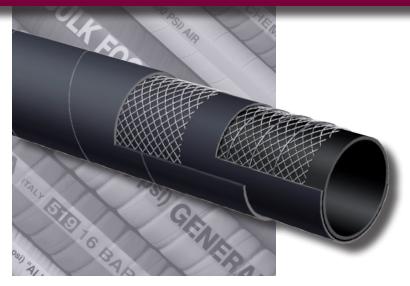
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Quick-Acting, combination nipples attached with bands or clamps or internally expanded couplings with gasket seal attached with ferrules.

Kuriyama offers a full line of Quick-Acting couplings, pin lug shank couplings and combination nipples. Refer to current Kuriyama-Couplings<sup>™</sup> and Accessories Catalog for type and pricing.



## **BALFAGOMMA®** Petroleum



STEEL

## **T604AA Series**

Flexor – SAE 100 R4 Oil **Return Hose** 

#### **General Applications:**

Low pressure return lines or suction lines with half the bend radius requirements of SAE J517 100 R4, service with petroleum based hydraulic fluids, water-glycol and water-fire resistant hydraulic fluids, oil, lubricants, crude oil, fuel oils and water.

#### Construction:

Tube: Black conductive NBR.

**Reinforcement:** High tensile textile cords with flexible steel helix wire.

Cover: Black CR - oil, fuel, weather, ozone and abrasion-resistant.

#### Service Temperature Range:

-40°F (-40°C) to +212°F (+100°C) constant operation. Maximum operating temperature: +257°F (+125°C). Air maximum temperature: +175°F (+80°C).

Note: Operating temperatures in excess of +212°F (+100°C) may materially reduce the life of the hose.

#### Working Pressure:

Constant Pressure – 20 Bar (300 psi) 3/4" 17 Bar (250 psi) 1" 14 Bar (200 psi) 1 1/4" 10 Bar (150 psi) 1 1/2" 7 Bar (100 psi) 2"

#### **Branding**:

ALFAGOMMA – ITALY – T604 (PSI) – SAE 100 R4 - (SIZE) - Date (in white letters)

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Nominal Specifications											
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Vacuum HG (in)	Min. Bending Radius (in at 68°F)	Standard Length (ft)	Weight (Ibs/ft)		
T604AA075	3/4	19	1.14	29	300	30	2 1/4	100	0.41		
T604AA100	1	25	1.38	35	250	30	3	100	0.52		
T604AA125	1 1/4	32	1.65	42	200	30	3 3/4	100	0.61		
T604AA150	1 1/2	38	1.89	48	150	30	4 1/2	100	0.70		
T604AA200	2	51	2.40	61	100	30	6	100	0.90		

#### **COUPLING SUGGESTIONS**

Crimp-on permanent type or combination nipples with bands.

Note: Hose cover does not need to be removed before attaching couplings.

Kuriyama offers a full line of Quick-Acting couplings, pin lug shank couplings and combination nipples. Refer to current Kuriyama-Couplings™ and Accessories Catalog for type and pricing.

Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice.

KPPCA0419

## Petroleum *Alfagomma*



STEEL

## **T650AH Series 150 PSI Oil Discharge Hose**



#### **General Applications:**

Oil discharge hose designed for use on trucks, docks or barges where a soft wall hose is required.

#### **Construction:**

Tube: Black conductive NBR.

Reinforcement: Spiraled high tensile textile cords with embedded static wire.

Cover: Red CR - abrasion, ozone and hydrocarbon resistant.

#### Service Temperature Range:

-22°F (-30°C) to +176°F (+80°C)

Working Pressure: Constant Pressure – 10 Bar (150 psi)

#### **Branding:** ALFAGOMMA - ITALY T650 10 BAR (150 PSI) -

PETROLEUM DELIVERY (in yellow letters)

Nominal Specifications									
Series Number	ID (in)	ID (mm)	OD (in)	OD (mm)	Max Rec. WP (psi)	Standard Length (ft)	Weight (lbs/ft)		
T650AH150	1 1/2	38	1.97	50	150	100	0.77		
T650AH200	2	51	2.40	61	150	100	0.82		
T650AH300	3	76	3.46	88	150	100	1.42		
T650AH400	4	102	4.49	114	150	100	1.92		

#### **COUPLING SUGGESTIONS**

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Quick-Acting or combination nipples attached with bands or clamps.

Kuriyama offers a full line of Quick-Acting couplings, pin lug shank couplings and combination nipples. Refer to current Kuriyama-Couplings<sup>™</sup> and Accessories Catalog for type and pricing.



## **Kuriyama Layflat Hose** and Accessories



#### Features and Advantages:

- Premium Polyurethane (TPU) Material Exhibits exceptional resistance to abrasion, allowing for use in applications where severe abrasion is a factor and providing longer service life versus rubber or PVC hoses. Also, exhibits exceptional resistance to oils and petroleum based products.
- Grounding Wires Hose contains four wires to help prevent the buildup of static electricity for added safety.

#### **Available Colors:**

NATO Green, Tan, Black

## **OFOIL Series**



**OROFLEX**<sup>®</sup>

### **Polyurethane Oil Transfer Hose**

X c®

#### **General Applications:**

- · Brackish and seawater
- Fluid transfer (see chemical chart)
- Fuels and oils transport

#### **Construction:**

Polyurethane (TPU) hose using an extruded through-the-weave process with circular woven high tenacity polyester reinforcement. Four electrical wires protected with a braided sheet of polyester to help prevent static build up.

#### Service Temperature Range:

-58°F (-50°C) to +122°F (+50°C)

- Unique Woven Construction Specially designed weave pattern provides resistance to kinking, stretching and twisting.
- Longer Lengths Manufactured in special 660 foot lengths to reduce possible leaking points.
- Smooth TPU Tube Provides low friction loss.
- Compact Design Flat hose design rolls up into tight coils for easy storage and transport, takes up less space than other hoses.

Nomina	Nominal Specifications									
Series	Size		Hose ID		Wall	Working	Burst Pressure	Coil	Weight	
Number	(in)	(mm)	(in)	(mm)	Thickness (in)	Pressure (psi) at 68°F	(psi) at 68°F	Length (ft)	(lbs/ft)	
0F0IL-200	2	50.8	2.059	50.8	0.087	142	597	50 to 660	0.26	
0F0IL-250	2 1/2	63.5	2.650	63.5	0.087	142	597	50 to 660	0.34	
0F0IL-300	3	76.2	3.059	76.2	0.093	142	597	50 to 660	0.43	
0F0IL-350	3 1/2	88.9	3.551	88.9	0.095	142	597	50 to 660	0.57	
OFOIL-400	4	101.6	4.059	101.6	0.106	142	597	50 to 660	0.66	
0F0IL-600	6	152.4	6.059	152.4	1.380	142	597	50 to 660	1.24	

**NOTE:** This is a non-stock product. Minimum order requirements may apply. Contact Kuriyama customer service for details.

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### KURIYAMA INDUSTRIAL RUBBER HOSES

#### Non-Conductive High Oil-Resistant General Service Hose

#### **General Applications:**

- Diesel
- Fuel oil
- Oil
- Other petroleum products

★ Not recommended for unleaded gasolines.

#### **Construction:**

- Cover Red Nitrile/PVC, RMA Class A oil resistant.
- Reinforcement Spiral polyester yarn.
- Tube Black Nitrile, RMA Class A oil resistant.

#### Service Temperature Range

- 20°F (-29°C) to +180°F (+82°C)

#### **Features and Advantages:**

- Long lengths on reels.
- High oil resistance (Class A) rated tube and cover.
- **Non-Conductive** tested to exceed minimum electrical resistance greater than one (1) MEGOHM per inch of hose length at 1000 volts DC.

#### **Branding:**

REDI-MAX HIGH OIL RESIST. NON-CONDUCTIVE-SIZE-WP-MADE IN USA

#### Packaging:

Maximum 2 pcs. on reel.

\* Cut lengths of 50 or 100 feet available.

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Nominal Specifications									
Part Number	Color	ID (in)	OD (in)	Working Pressure (psi)	Reel Length (ft)	Weight (Ibs/pc)			
REDIMAX-025x700	Red	1/4	0.62	300	700	112			
REDIMAX-038x700	Red	3/8	0.69	300	700	126			
REDIMAX-050x700	Red	1/2	0.84	300	700	175			
REDIMAX-075x700	Red	3/4	1.15	300	700	294			
REDIMAX-100x700	Red	1	1.43	300	700	441			
REDIMAX-125x500	Red	1 1/4	1.78	250	500	405			
REDIMAX-150x400	Red	1 1/2	2.03	250	400	380			

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### KURIYAMA INDUSTRIAL RUBBER HOSES



## Redi-Transfer



#### **Red Fuel Oil Discharge Hose**

#### **General Applications:**

• A high quality hose to handle oil, diesel, fuel oil and other petroleum products for home delivery.

#### **Construction:**

- Tube Black Class A Nitrile, high oil resistance.
- Reinforcement Spiral polyester yarn with static wire.
- Cover Red Class A Nitrile/PVC, high oil resistance.

#### Service Temperature Range:

-40°F (-40°C) to +212°F (+100°C)

#### **Features and Advantages:**

- Long lengths on reels.
- High oil resistance (Class A) rated tube and cover.

#### **Branding:**

REDI-TRANSFER FUEL OIL DELIVERY SIZE-WP-MADE IN USA

#### **Packaging:**

Cut lengths and bulk reels (maximum 3 pcs. on reel).

## Redi-Transfer<sup>™</sup> Cut Lengths

Nominal Specifications									
Color	ID (in)	OD (in)	Working Pressure (psi)	Length (ft)	Weight (lbs/pc)				
RED	1	1.50	250	100	47				
RED	1	1.50	250	150	71				
RED	1	1.50	250	200	94				
RED	1 1/4	1.78	250	100	59				
RED	1 1/4	1.78	250	125	74				
RED	1 1/4	1.78	250	150	89				
RED	1 3/8	1.88	250	125	81				
RED	1 3/8	1.88	250	150	98				
RED	1 1/2	2.09	250	125	100				
RED	1 1/2	2.09	250	150	120				
RED	1 1/2	2.09	250	175	140				
	Color RED RED RED RED RED RED RED RED RED RED	Color   ID (in)     RED   1     1   1	Color   ID (in)   OD (in)     RED   1   1.50     RED   1   1.78     RED   11/4   1.78     RED   1 3/8   1.88     RED   1 3/8   1.88     RED   1 1/2   2.09     RED   1 1/2   2.09	ColorID (in)OD (in)Working Pressure (psi)RED11.50250RED11.50250RED11.50250RED11.78250RED11/41.78250RED11/41.78250RED13/81.88250RED13/81.88250RED11/22.09250	ColorID (in)OD (in)Working Pressure (psi)Length (ft)RED11.50250100RED11.50250150RED11.50250200RED11.78250100RED11/41.78250100RED13/81.88250125RED13/81.88250150RED11/22.09250150				

#### Redi-Transfer<sup>™</sup> Bulk Hose on Reels

Nominal Specifications									
Part Number	Color	ID (in)	OD (in)	Working Pressure (psi)	Reel Length (ft)	Weight (Ibs/pc)			
REDITFR-100x500	Red	1	1.50	250	500	235			
REDITFR-125x450	Red	1 1/4	1.78	250	450	265			
REDITFR-137x450	Red	1 3/8	1.88	250	450	293			
REDITFR-150x400	Red	1 1/2	2.09	250	400	320			

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## KURIYAMA INDUSTRIAL RUBBER HOSES

### Farm Tank Bulk Hose and Coupled Assemblies

#### **General Applications:**

- Agricultural equipment fuel filler hose
- · Electrical pumps; built-in static wire provides safety
- Farm or barrel-type pumps
- Fuel dispensing hose for construction and industrial equipment

Note: This is not a UL approved hose and should not be used in curb pump hose applications.

#### **Construction:**

- Cover Black Class A Nitrile /PVC, high oil resistance.
- Reinforcement Polyester cord with static wire.
- Tube Black Class A Nitrile, high oil resistance.

#### Service Temperature Range:

-20°F (-29°C) to +160°F (+70°C)

#### **Features and Advantages:**

• A durable quality fuel dispensing hose - oil & abrasion resistant.

#### **Branding:**

REDI-FILL™ FARM TANK W/STATIC WIRE- SIZE- MADE IN USA

#### Packaging:

Brass M X M coupled assembled lengths and reels (2 pcs maximum).

#### **Redi-Fill<sup>™</sup> Coupled Assemblies**



Note: 3/4" assemblies packaged 10 per carton; 1" assemblies packaged 5 per carton; or sold individually.

Nominal Specifications									
Part Number	Color	ID (in)	OD (in)	Working Pressure (psi)	Coil Length (ft)	Weight (Ibs/pc)			
BLKFT-075X8	Black	3/4	1.13	60	8	3.3			
BLKFT-075X10	Black	3/4	1.13	60	10	3.8			
BLKFT-075X12	Black	3/4	1.13	60	12	4.0			
BLKFT-075X14	Black	3/4	1.13	60	14	5.0			
BLKFT-075X15	Black	3/4	1.13	60	15	5.4			
BLKFT-075X20	Black	3/4	1.13	60	20	7.0			
BLKFT-100X8	Black	1	1.38	60	8	4.8			
BLKFT-100X10	Black	1	1.38	60	10	5.8			
BLKFT-100X12	Black	1	1.38	60	12	6.7			
BLKFT-100X14	Black	1	1.38	60	14	7.5			
BLKFT-100X15	Black	1	1.38	60	15	8.0			
BLKFT-100X20	Black	1	1.38	60	20	10.5			

#### Redi-Fill<sup>™</sup> Bulk Hose on Reels

Nominal Specifications								
Color	ID (in)	OD (in)	Working Pressure (psi)	Reel Length (ft)	Weight (Ibs/pc)			
Black	3/4	1.13	60	700	203			
Black	1	1.38	60	700	315			
	Color Black	Color ID (in) Black 3/4	ColorID (in)OD (in)Black3/41.13	ColorID (in)OD (in)Working Pressure (psi)Black3/41.1360	ColorID (in)OD (in)Working Pressure (psi)Reel Length (ft)Black3/41.1360700			

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### **Aluminum Quick-Acting Couplings**



#### Aluminum Part C Female Coupler x Hose Shank

		•	
Part Number	Size (in)	Weight Each (lbs)	Standard Carton
AL-C075	3/4	0.26	50
AL-C100	1	0.42	60
AL-C125	1 1/4	0.68	35
AL-C150	1 1/2	0.74	30
AL-C200	2	0.98	40
AL-C250	2 1/2	1.28	30
AL-C300	3	2.20	15
AL-C400	4	3.16	15
AL-C500	5	3.88	4
AL-C600	6	7.70	6
AL-C800	8	10.63	1
HDAL-C801	8	12.58	1



#### **Aluminum Part DC Dust Cap**

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
AL-DC075	3/4	0.22	50
AL-DC100	1	0.34	40
AL-DC125	1 1/4	0.58	25
AL-DC150	1 1/2	0.64	40
AL-DC200	2	0.80	60
AL-DC250	2 1/2	0.94	50
AL-DC300	3	1.44	30
AL-DC400	4	2.34	15
AL-DC500	5	3.06	4
AL-DC600	6	4.66	6
AL-DC800	8	9.04	4
HDAL-DC801	8	10.63	4



#### Aluminum Part E Male Adapter x Hose Shank

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
AL-E075	3/4	0.11	50
AL-E100	1	0.20	50
AL-E125	1 1/4	0.26	30
AL-E150	1 1/2	0.38	40
AL-E200	2	0.60	50
AL-E250	2 1/2	0.86	20
AL-E300	3	1.32	18
AL-E400	4	2.10	20
AL-E500	5	3.56	4
AL-E600	6	6.16	6
AL-E800	8	7.73	2
HDAL-E801	8	9.75	2



#### **Aluminum Part DP Dust Plug**

			5
Part Number	Size (in)	Weight Each (lbs)	Standard Carton
AL-DP075	3/4	0.08	50
AL-DP100	1	0.10	80
AL-DP125	1 1/4	0.18	50
AL-DP150	1 1/2	0.25	50
AL-DP200	2	0.38	60
AL-DP250	2 1/2	0.54	40
AL-DP300	3	0.74	50
AL-DP400	4	1.22	25
AL-DP500	5	1.46	4
AL-DP600	6	2.53	20
AL-DP800	8	4.04	6
HDAL-DP801	8	5.00	6





## SS316 Stainless Steel Quick-Acting Couplings



#### 316 Stainless Part C Female Coupler x Hose Shank

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
SS-C075	3/4	0.46	25
SS-C100	1	0.74	25
SS-C125	1 1/4	1.41	20
SS-C150	1 1/2	1.68	20
SS-C200	2	2.30	20
SS-C250	2 1/2	3.10	12
SS-C300	3	4.12	8
SS-C400	4	6.98	6
SS-C500	5	10.32	4
SS-C600	6	14.55	2



**316 Stainless Part DC Dust Cap** Size Weight Each (lbs) Standard Part Number (in) Carton 3/4 SS-DC075 0.36 25 SS-DC100 1 0.54 25 SS-DC125  $1 \frac{1}{4}$ 1.30 20 SS-DC150 1 1/2 1.46 25 SS-DC200 2 1.78 20 SS-DC250 2 1/2 2.38 12 SS-DC300 3 3.04 8 SS-DC400 4 5.02 6 SS-DC500 5 7.35 4

9.92

2



#### **316 Stainless Part E Male Adapter x Hose Shank**

		-	
Part Number	Size (in)	Weight Each (lbs)	Standard Carton
SS-E075	3/4	0.36	25
SS-E100	1	0.60	25
SS-E125	1 1/4	0.95	25
SS-E150	1 1/2	1.22	25
SS-E200	2	1.98	20
SS-E250	2 1/2	2.64	12
SS-E300	3	3.90	8
SS-E400	4	6.38	6
SS-E500	5	9.10	4
SS-E600	6	13.49	2



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#### **316 Stainless Part DP Dust Plug**

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
SS-DP075	3/4	0.20	25
SS-DP100	1	0.28	25
SS-DP125	1 1/4	0.60	25
SS-DP150	1 1/2	0.72	25
SS-DP200	2	0.96	20
SS-DP250	2 1/2	1.47	12
SS-DP300	3	1.94	8
SS-DP400	4	3.36	6
SS-DP500	5	6.24	4
SS-DP600	6	9.08	2

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SS-DC600





### SS304 Stainless Steel Quick-Acting Couplings



#### **304 Stainless Part C Female Coupler x Hose Shank**

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
SS304-C075	3/4	0.46	25
SS304-C100	1	0.74	25
SS304-C125	1 1/4	1.41	20
SS304-C150	1 1/2	1.68	20
SS304-C200	2	2.30	20
SS304-C250	2 1/2	3.10	12
SS304-C300	3	4.12	8
SS304-C400	4	6.98	6
SS304-C500	5	10.32	4
SS304-C600	6	14.55	2



#### **304 Stainless Part DC Dust Cap**

			•
Part Number	Size (in)	Weight Each (lbs)	Standard Carton
SS304-DC075	3/4	0.36	25
SS304-DC100	1	0.54	25
SS304-DC125	1 1/4	1.30	20
SS304-DC150	1 1/2	1.46	25
SS304-DC200	2	1.78	20
SS304-DC250	2 1/2	2.38	12
SS304-DC300	3	3.04	8
SS304-DC400	4	5.02	6
SS304-DC500	5	7.35	4
SS304-DC600	6	9.92	2



#### **304 Stainless Part E Male Adapter x Hose Shank**

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
SS304-E075	3/4	0.36	25
SS304-E100	1	0.60	25
SS304-E125	1 1/4	0.95	25
SS304-E150	1 1/2	1.22	25
SS304-E200	2	1.98	20
SS304-E250	2 1/2	2.64	12
SS304-E300	3	3.90	8
SS304-E400	4	6.38	6
SS304-E500	5	9.10	4
SS304-E600	6	13.49	2



#### **304 Stainless Part DP Dust Plug**

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Part Number	Size (in)	Weight Each (lbs)	Standard Carton
SS304-DP075	3/4	0.20	25
SS304-DP100	1	0.28	25
SS304-DP125	1 1/4	0.60	25
SS304-DP150	1 1/2	0.72	25
SS304-DP200	2	0.96	20
SS304-DP250	2 1/2	1.47	12
SS304-DP300	3	1.94	8
SS304-DP400	4	3.36	6
SS304-DP600	6	9.08	2

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Aluminum Vapor Recovery Coupler with Probe; Female Coupler x Hose Shank (with BUNA gasket & forged brass handles)

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
VRP-A4030	4 x 3	3.04	4
VRP-A4040	4 x 4	3.15	4



Aluminum Vapor Recovery Coupler with Probe; Female Coupler x Male Adapter (with BUNA gasket & forged brass handles)

Part Number	Size	Weight	Standard
	(in)	Each (lbs)	Carton
DAP-4030	4 x 3	3.54	4



Aluminum Vapor Recovery Coupler with Probe; Female Coupler x Female NPT

(with BUNA gasket & forged brass handles)

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
CGDP-A4030	4 x 3	3.08	4
CGDP-A4040	4 x 4	3.80	4



#### Sight Glass - Acrylic (TTMA)

Part Number	Size (in)	Weight Each (Ibs)	Standard Carton
SG-TTMA300	3	1.21	20
SG-TTMA400	4	1.45	20



Aluminum Vapor Recovery Coupler with Probe Female Coupler Poppet with Viton Seal x Hose Shank

		-	
Part Number	Size (in)	Weight Each (lbs)	Standard Carton
VRP-P4030	4 x 3	4.01	5



Brass Probe					
Part Number	Size (in)	Weight Each (lbs)	Standard Carton		
VRP-PROBE	3/16	0.14	1		

NOTE: For additional Coupling Products refer to Kuriyama's separate full line Couplings and Accessories Catalog.







**Buna-N Gasket for Quick-Acting Couplings** Temperature Rating -40°F (-40°C) to +250°F (+121°C)

Size (in)	Weight Each (lbs)	Standard Carton
3/4	0.008	10
1	0.010	10
1 1/4	0.016	10
1 1/2	0.018	10
2	0.022	10
2 1/2	0.034	10
3	0.042	10
4	0.066	10
5	0.094	10
6	0.116	10
8	0.220	10
8	0.240	10
10	0.390	10
	(in) 3/4 1 1 1/4 1 1/2 2 2 1/2 3 4 5 6 8 8 8	3/4   0.008     1   0.010     1 1/4   0.016     1 1/2   0.018     2   0.022     2 1/2   0.034     3   0.042     4   0.066     5   0.094     6   0.116     8   0.220     8   0.240

Note: Sold in standard carton quantity only.



Viton Gasket for Quick-Acting Couplings Temperature Rating -20°F (-28°C) to +400°F (+240°C)

Part Number	Size (in)	Weight Each (lbs)	Standard Carton
VITON075	3/4	0.007	10
VITON100	1	0.010	10
VITON125	1 1/4	0.016	10
VITON150	1 1/2	0.018	10
VITON200	2	0.022	10
VITON250	2 1/2	0.034	10
VITON300	3	0.042	10
VITON400	4	0.066	10

Note: Sold in standard carton quantity only.

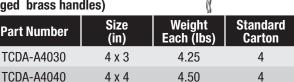


#### **BUNA-N Gasket for API Petroleum Couplings**

Temperature Rating -40°F (-40°C) to +250°F (+121°C)

Part Number	Size	Weight	Standard
	(in)	Each (lbs)	Carton
TCG-400	4	0.070	1

#### API Aluminum Female Coupler x Male Adapter (with API-BUNA gasket and forged brass handles)



#### API Aluminum Female Coupler x Female Coupler (with API-BUNA gasket and

forged brass handles)

Part Number	Size	Weight	Standard
	(in)	Each (lbs)	Carton
TCDD-A4040	4 x 4	6.00	2

### API Aluminum Dust Cap

(with API-BUNA gasket and

forged brass handles)

Part Number	Size	Weight	Standard
	(in)	Each (lbs)	Carton
TCDC-A400	4	3.00	6

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### Kuri-Krimp<sup>™</sup> Plated Steel Crimp Ferrules

Kuri-Krimp <sup>™</sup> 304 Stainless Steel Crimp	
Ferrules	

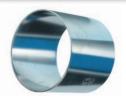
CRF-CS08105   3/4   1.31   0.059   2.14   0.15   200     CRF-CS08107   3/4   1.44   0.059   2.14   0.17   200     CRF-CS08108   3/4   1.50   0.059   2.14   0.17   200     CRF-CS10108   1   1.50   0.059   2.29   0.20   200     CRF-CS10109   1   1.63   0.059   2.29   0.22   200     CRF-CS10110   1   1.63   0.059   2.29   0.22   200     CRF-CS10112   1   1.75   0.059   2.29   0.24   200     CRF-CS15204   11/2   2.00   0.059   2.36   0.25   128     CRF-CS15204   11/2   2.25   0.059   2.36   0.28   80     CRF-CS15206   11/2   2.39   0.059   2.36   0.35   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81	Part Number	Hose ID (in)	Ferrule ID (in)	Wall Thickness (in)	Length (in)	Weight Each (lbs)	Std. Carton
CRF-CS08107   3/4   1.44   0.059   2.14   0.17   200     CRF-CS08108   3/4   1.50   0.059   2.29   0.19   200     CRF-CS10109   1   1.56   0.059   2.29   0.20   200     CRF-CS10110   1   1.63   0.059   2.29   0.21   200     CRF-CS10111   1   1.63   0.059   2.29   0.22   200     CRF-CS10112   1   1.75   0.059   2.29   0.24   200     CRF-CS1520   1.1/2   2.00   0.059   2.36   0.25   128     CRF-CS15204   1.1/2   2.25   0.059   2.36   0.28   80     CRF-CS20208   1.1/2   2.50   0.059   2.79   0.40   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.40   80     CRF-CS20214   2   2.80	CRF-CS08105	3/4	1.31	0.059	2.14	0.15	200
CRF-CS08108   3/4   1.50   0.059   2.14   0.18   200     CRF-CS10108   1   1.50   0.059   2.29   0.19   200     CRF-CS10109   1   1.66   0.059   2.29   0.20   200     CRF-CS10110   1   1.63   0.059   2.29   0.22   200     CRF-CS10112   1   1.75   0.059   2.29   0.22   200     CRF-CS15200   11/2   2.00   0.059   2.36   0.25   128     CRF-CS15204   11/2   2.25   0.059   2.36   0.28   80     CRF-CS15206   11/2   2.39   0.059   2.36   0.35   80     CRF-CS15206   11/2   2.39   0.059   2.79   0.37   80     CRF-CS20208   11/2   2.60   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS25304   2.1/2   3.25	CRF-CS08106	3/4	1.38	0.059	2.14	0.16	200
CRF-CS10108   1   1.50   0.059   2.29   0.19   200     CRF-CS10109   1   1.56   0.059   2.29   0.21   200     CRF-CS10110   1   1.63   0.059   2.29   0.22   200     CRF-CS10111   1   1.63   0.059   2.29   0.24   200     CRF-CS10113   1   1.81   0.059   2.36   0.25   128     CRF-CS15202   11/2   2.12   0.059   2.36   0.28   80     CRF-CS15204   11/2   2.25   0.059   2.36   0.28   80     CRF-CS120208   11/2   2.56   0.059   2.79   0.37   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS20213   2   2.94   0.059   3.11   0.56   60     CRF-CS25302   2.1/2   3.12 <t< td=""><td>CRF-CS08107</td><td>3/4</td><td>1.44</td><td>0.059</td><td>2.14</td><td>0.17</td><td>200</td></t<>	CRF-CS08107	3/4	1.44	0.059	2.14	0.17	200
CRF-CS10109   1   1.56   0.059   2.29   0.20   200     CRF-CS10110   1   1.63   0.059   2.29   0.21   200     CRF-CS10111   1   1.69   0.059   2.29   0.22   200     CRF-CS10112   1   1.75   0.059   2.36   0.25   128     CRF-CS15200   11/2   2.00   0.059   2.36   0.28   80     CRF-CS15204   11/2   2.25   0.059   2.36   0.28   80     CRF-CS15206   11/2   2.39   0.059   2.36   0.35   80     CRF-CS120208   11/2   2.56   0.059   2.79   0.40   80     CRF-CS20210   2   2.62   0.059   2.79   0.44   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS20215   2   2.94   0.059   3.11   0.56   60     CRF-CS25302   2.1/2   3.12	CRF-CS08108	3/4	1.50	0.059	2.14	0.18	200
CRF-CS10110   1   1.63   0.059   2.29   0.21   200     CRF-CS10111   1   1.69   0.059   2.29   0.22   200     CRF-CS10112   1   1.75   0.059   2.29   0.24   200     CRF-CS15200   1 1/2   2.00   0.059   2.36   0.25   128     CRF-CS15202   1 1/2   2.12   0.059   2.36   0.26   128     CRF-CS15206   1 1/2   2.25   0.059   2.36   0.28   80     CRF-CS15206   1 1/2   2.39   0.059   2.36   0.35   80     CRF-CS20208   1 1/2   2.62   0.059   2.79   0.40   80     CRF-CS20211   2   2.62   0.059   2.79   0.44   80     CRF-CS20213   2   2.81   0.059   3.11   0.52   60     CRF-CS25302   2 1/2   3.12   0.059   3.11   0.56   60     CRF-CS253030   2 1/2   3.50<	CRF-CS10108	1	1.50	0.059	2.29	0.19	200
CRF-CS10111   1   1.69   0.059   2.29   0.22   200     CRF-CS10112   1   1.75   0.059   2.29   0.24   200     CRF-CS10113   1   1.81   0.059   2.29   0.24   200     CRF-CS15200   11/2   2.12   0.059   2.36   0.25   128     CRF-CS15204   11/2   2.25   0.059   2.36   0.28   80     CRF-CS15206   11/2   2.39   0.059   2.36   0.35   80     CRF-CS20208   11/2   2.50   0.059   2.79   0.40   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20211   2   2.81   0.059   2.79   0.44   80     CRF-CS20302   2.1/2   3.12   0.059   3.11   0.54   60     CRF-CS20302   2.1/2   3.25   0.059   3.11   0.56   60     CRF-CS25304   2.1/2   3.50	CRF-CS10109	1	1.56	0.059	2.29	0.20	200
CRF-CS10112   1   1.75   0.059   2.29   0.23   200     CRF-CS10113   1   1.81   0.059   2.36   0.25   128     CRF-CS15200   11/2   2.12   0.059   2.36   0.26   128     CRF-CS15204   11/2   2.25   0.059   2.36   0.27   80     CRF-CS15206   11/2   2.39   0.059   2.36   0.28   80     CRF-CS20208   11/2   2.50   0.059   2.79   0.37   80     CRF-CS20209   2   2.66   0.059   2.79   0.40   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS20215   2   2.94   0.059   3.11   0.54   60     CRF-CS25302   2.1/2   3.25   0.059   3.11   0.56   60     CRF-CS25308   2.1/2   3.50	CRF-CS10110	1	1.63	0.059	2.29	0.21	200
CRF-CS10113   1   1.81   0.059   2.29   0.24   200     CRF-CS15200   11/2   2.00   0.059   2.36   0.25   128     CRF-CS15202   11/2   2.12   0.059   2.36   0.26   128     CRF-CS15204   11/2   2.25   0.059   2.36   0.28   80     CRF-CS15206   11/2   2.50   0.059   2.36   0.35   80     CRF-CS20208   11/2   2.56   0.059   2.79   0.40   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS20215   2   2.94   0.059   3.11   0.52   60     CRF-CS20302   2.1/2   3.12   0.059   3.11   0.56   60     CRF-CS25304   2.1/2   3.50   0.059   3.11   0.56   60     CRF-CS30310   3   3.62	CRF-CS10111	1	1.69	0.059	2.29	0.22	200
CRF-CS15200   1 1/2   2.00   0.059   2.36   0.25   128     CRF-CS15202   1 1/2   2.12   0.059   2.36   0.26   128     CRF-CS15204   1 1/2   2.25   0.059   2.36   0.28   80     CRF-CS15206   1 1/2   2.39   0.059   2.36   0.35   80     CRF-CS20208   1 1/2   2.56   0.059   2.79   0.40   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS20215   2   2.94   0.059   2.79   0.44   80     CRF-CS25302   2 1/2   3.12   0.059   3.11   0.56   60     CRF-CS25308   2 1/2   3.50   0.059   3.11   0.58   60     CRF-CS30310   3   3.62   0.091   3.94   1.17   40     CRF-CS30311   3   3.69	CRF-CS10112	1	1.75	0.059	2.29	0.23	200
CRF-CS15202   1   1/2   2.12   0.059   2.36   0.26   128     CRF-CS15204   1   1/2   2.25   0.059   2.36   0.27   80     CRF-CS15206   1   1/2   2.39   0.059   2.36   0.35   80     CRF-CS20208   1   1/2   2.56   0.059   2.79   0.37   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS20215   2   2.94   0.059   2.79   0.44   80     CRF-CS25302   2.1/2   3.12   0.059   3.11   0.55   60     CRF-CS25304   2.1/2   3.25   0.059   3.11   0.56   60     CRF-CS30309   3   3.66   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.91   3.94   1.20   40	CRF-CS10113	1	1.81	0.059	2.29	0.24	200
CRF-CS15204   1 1/2   2.25   0.059   2.36   0.27   80     CRF-CS15206   1 1/2   2.39   0.059   2.36   0.35   80     CRF-CS20208   1 1/2   2.56   0.059   2.79   0.37   80     CRF-CS20201   2   2.62   0.059   2.79   0.40   80     CRF-CS20211   2   2.62   0.059   2.79   0.44   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS20205   2   1/2   3.12   0.059   3.11   0.52   60     CRF-CS25304   2 1/2   3.25   0.059   3.11   0.56   60     CRF-CS2308   2 1/2   3.50   0.059   3.11   0.58   60     CRF-CS30309   3   3.66   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30313   3 <td< td=""><td>CRF-CS15200</td><td>1 1/2</td><td>2.00</td><td>0.059</td><td>2.36</td><td>0.25</td><td>128</td></td<>	CRF-CS15200	1 1/2	2.00	0.059	2.36	0.25	128
CRF-CS15206   1 1/2   2.39   0.059   2.36   0.28   80     CRF-CS20208   1 1/2   2.50   0.059   2.79   0.37   80     CRF-CS20209   2   2.62   0.059   2.79   0.40   80     CRF-CS20211   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.42   80     CRF-CS20215   2   2.94   0.059   2.79   0.44   80     CRF-CS25302   2 1/2   3.12   0.059   3.11   0.52   60     CRF-CS25304   2 1/2   3.25   0.059   3.11   0.56   60     CRF-CS20308   2 1/2   3.50   0.059   3.11   0.58   60     CRF-CS30309   3   3.56   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30313   3   3.81   <	CRF-CS15202	1 1/2	2.12	0.059	2.36	0.26	128
CRF-CS20208   1 1/2   2.50   0.059   2.36   0.35   80     CRF-CS20209   2   2.56   0.059   2.79   0.40   80     CRF-CS20211   2   2.62   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.42   80     CRF-CS20215   2   2.94   0.059   2.79   0.44   80     CRF-CS20302   2 1/2   3.12   0.059   3.11   0.54   60     CRF-CS25304   2 1/2   3.25   0.059   3.11   0.56   60     CRF-CS23030   2 1/2   3.50   0.059   3.11   0.58   60     CRF-CS30309   3   3.66   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30312   3   3.75   0.91   3.94   1.23   40     CRF-CS30313   3   3.94   0.	CRF-CS15204	1 1/2	2.25	0.059	2.36	0.27	80
CRF-CS20209   2   2.56   0.059   2.79   0.37   80     CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20211   2   2.68   0.059   2.79   0.42   80     CRF-CS20215   2   2.81   0.059   2.79   0.44   80     CRF-CS20215   2   2.94   0.059   3.11   0.52   60     CRF-CS25302   2.1/2   3.12   0.059   3.11   0.54   60     CRF-CS25306   2.1/2   3.39   0.059   3.11   0.58   60     CRF-CS30309   3   3.56   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30312   3   3.75   0.091   3.94   1.23   40     CRF-CS30313   3   3.81   0.091   3.94   1.25   40     CRF-CS30315   3   3.94   0.091 <td>CRF-CS15206</td> <td>1 1/2</td> <td>2.39</td> <td>0.059</td> <td>2.36</td> <td>0.28</td> <td>80</td>	CRF-CS15206	1 1/2	2.39	0.059	2.36	0.28	80
CRF-CS20210   2   2.62   0.059   2.79   0.40   80     CRF-CS20211   2   2.68   0.059   2.79   0.42   80     CRF-CS20213   2   2.81   0.059   2.79   0.44   80     CRF-CS20215   2   2.94   0.059   2.79   0.44   80     CRF-CS20302   2.1/2   3.12   0.059   3.11   0.52   60     CRF-CS25304   2.1/2   3.25   0.059   3.11   0.56   60     CRF-CS25308   2.1/2   3.39   0.059   3.11   0.58   60     CRF-CS30309   3   3.56   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30312   3   3.75   0.091   3.94   1.23   40     CRF-CS30313   3   3.94   0.091   3.94   1.25   40     CRF-CS30400   3   4.00   0.091	CRF-CS20208	1 1/2	2.50	0.059	2.36	0.35	80
CRF-CS20211   2   2.68   0.059   2.79   0.40   80     CRF-CS20213   2   2.81   0.059   2.79   0.42   80     CRF-CS20215   2   2.94   0.059   2.79   0.44   80     CRF-CS25302   2 1/2   3.12   0.059   3.11   0.52   60     CRF-CS25304   2 1/2   3.25   0.059   3.11   0.56   60     CRF-CS25308   2 1/2   3.50   0.059   3.11   0.58   60     CRF-CS30309   3   3.56   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30312   3   3.75   0.091   3.94   1.25   40     CRF-CS30313   3   3.81   0.091   3.94   1.25   40     CRF-CS30400   3   4.00   0.91   3.94   1.30   40     CRF-CS40410   4   4.56   0.91 </td <td>CRF-CS20209</td> <td>2</td> <td>2.56</td> <td>0.059</td> <td>2.79</td> <td>0.37</td> <td>80</td>	CRF-CS20209	2	2.56	0.059	2.79	0.37	80
CRF-CS20213   2   2.81   0.059   2.79   0.42   80     CRF-CS20215   2   2.94   0.059   2.79   0.44   80     CRF-CS25302   2 1/2   3.12   0.059   3.11   0.52   60     CRF-CS25304   2 1/2   3.25   0.059   3.11   0.54   60     CRF-CS25308   2 1/2   3.39   0.059   3.11   0.58   60     CRF-CS30309   3   3.56   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30312   3   3.75   0.091   3.94   1.21   40     CRF-CS30313   3   3.81   0.091   3.94   1.25   40     CRF-CS30315   3   3.94   0.091   3.94   1.30   40     CRF-CS40409   4   4.56   0.091   4.19   1.57   30     CRF-CS40410   4   4.63   0.091	CRF-CS20210	2	2.62	0.059	2.79	0.40	80
CRF-CS20215   2   2.94   0.059   2.79   0.44   80     CRF-CS25302   2 1/2   3.12   0.059   3.11   0.52   60     CRF-CS25304   2 1/2   3.25   0.059   3.11   0.54   60     CRF-CS25306   2 1/2   3.39   0.059   3.11   0.56   60     CRF-CS25308   2 1/2   3.50   0.059   3.11   0.58   60     CRF-CS30309   3   3.56   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30312   3   3.75   0.091   3.94   1.23   40     CRF-CS30313   3   3.81   0.091   3.94   1.25   40     CRF-CS30400   3   4.00   0.91   3.94   1.30   40     CRF-CS40410   4   4.63   0.091   4.19   1.57   30     CRF-CS40411   4   4.68   0.	CRF-CS20211	2	2.68	0.059	2.79	0.40	80
CRF-CS25302 2 1/2 3.12 0.059 3.11 0.52 60   CRF-CS25304 2 1/2 3.25 0.059 3.11 0.54 60   CRF-CS25306 2 1/2 3.39 0.059 3.11 0.56 60   CRF-CS25308 2 1/2 3.50 0.059 3.11 0.58 60   CRF-CS30309 3 3.56 0.091 3.94 1.17 40   CRF-CS30310 3 3.62 0.091 3.94 1.20 40   CRF-CS30312 3 3.75 0.091 3.94 1.23 40   CRF-CS30313 3 3.81 0.091 3.94 1.23 40   CRF-CS30315 3 3.94 0.091 3.94 1.25 40   CRF-CS30400 3 4.00 0.091 3.94 1.25 40   CRF-CS40410 4 4.63 0.091 4.19 1.57 30   CRF-CS40411 4 4.63 0.091 4.19 1.63 30   CRF-CS40412 4 4.75	CRF-CS20213	2	2.81	0.059	2.79	0.42	80
CRF-CS25304   2 1/2   3.25   0.059   3.11   0.54   60     CRF-CS25306   2 1/2   3.39   0.059   3.11   0.56   60     CRF-CS25308   2 1/2   3.50   0.059   3.11   0.58   60     CRF-CS30309   3   3.56   0.091   3.94   1.17   40     CRF-CS30310   3   3.62   0.091   3.94   1.20   40     CRF-CS30311   3   3.69   0.091   3.94   1.21   40     CRF-CS30313   3   3.81   0.091   3.94   1.23   40     CRF-CS30315   3   3.94   0.091   3.94   1.25   40     CRF-CS30400   3   4.00   0.091   3.94   1.30   40     CRF-CS40409   4   4.56   0.091   4.19   1.57   30     CRF-CS40411   4   4.63   0.091   4.19   1.63   30     CRF-CS40413   4   4.81   0.091	CRF-CS20215	2	2.94	0.059	2.79	0.44	80
CRF-CS253062 1/23.390.0593.110.5660CRF-CS253082 1/23.500.0593.110.5860CRF-CS3030933.560.0913.941.1740CRF-CS3031033.620.0913.941.1940CRF-CS3031133.690.0913.941.2040CRF-CS3031233.750.0913.941.2140CRF-CS3031333.810.0913.941.2340CRF-CS3031533.940.0913.941.2540CRF-CS3040034.000.0913.941.3040CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.6130CRF-CS4041144.680.0914.191.6530CRF-CS4041344.810.0914.191.6530CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.1012CRF-CS60612667.000.1185.674.3112CRF-CS6070067.000.1185.674.3112CRF-CS6070267.130.1185.674.3912	CRF-CS25302	2 1/2	3.12	0.059	3.11	0.52	60
CRF-CS253082 1/23.500.0593.110.5860CRF-CS3030933.560.0913.941.1740CRF-CS3031033.620.0913.941.1940CRF-CS3031133.690.0913.941.2040CRF-CS3031233.750.0913.941.2140CRF-CS3031333.810.0913.941.2340CRF-CS3031533.940.0913.941.2540CRF-CS3040034.000.0913.941.3040CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.6130CRF-CS4041144.680.0914.191.6330CRF-CS4041244.750.0914.191.6530CRF-CS4041344.810.0914.191.6730CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.1012CRF-CS60612667.000.1185.674.3112CRF-CS6070067.000.1185.674.3112CRF-CS6070267.130.1185.674.3912	CRF-CS25304	2 1/2	3.25	0.059	3.11	0.54	60
CRF-CS3030933.560.0913.941.1740CRF-CS3031033.620.0913.941.1940CRF-CS3031133.690.0913.941.2040CRF-CS3031233.750.0913.941.2140CRF-CS3031333.810.0913.941.2340CRF-CS3031533.940.0913.941.2540CRF-CS3040034.000.0913.941.3040CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.5930CRF-CS4041144.680.0914.191.6330CRF-CS4041244.750.0914.191.6530CRF-CS4041344.810.0914.191.6730CRF-CS4050145.060.0914.191.7230CRF-CS4050145.060.0914.191.7230CRF-CS6061066.630.1185.674.1012CRF-CS6061266.750.1185.674.1712CRF-CS6070067.000.1185.674.3112CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS25306	2 1/2	3.39	0.059	3.11	0.56	60
CRF-CS3031033.620.0913.941.1940CRF-CS3031133.690.0913.941.2040CRF-CS3031233.750.0913.941.2140CRF-CS3031333.810.0913.941.2340CRF-CS3031533.940.0913.941.2540CRF-CS3040034.000.0913.941.3040CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.5930CRF-CS4041144.680.0914.191.6330CRF-CS4041244.750.0914.191.6330CRF-CS4041344.810.0914.191.6730CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.1012CRF-CS6061266.750.1185.674.1012CRF-CS6070067.000.1185.674.3112CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS25308	2 1/2	3.50	0.059	3.11	0.58	60
CRF-CS3031133.690.0913.941.2040CRF-CS3031233.750.0913.941.2140CRF-CS3031333.810.0913.941.2340CRF-CS3031533.940.0913.941.2540CRF-CS3040034.000.0913.941.3040CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.5930CRF-CS4041144.680.0914.191.6130CRF-CS4041244.750.0914.191.6330CRF-CS4041344.810.0914.191.6530CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7230CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6070067.000.1185.674.3112CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS30309	3	3.56	0.091	3.94	1.17	40
CRF-CS3031233.750.0913.941.2140CRF-CS3031333.810.0913.941.2340CRF-CS3031533.940.0913.941.2540CRF-CS3040034.000.0913.941.3040CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.6130CRF-CS4041144.680.0914.191.6330CRF-CS4041244.750.0914.191.6530CRF-CS4041344.810.0914.191.6530CRF-CS4050045.000.0914.191.6730CRF-CS4050145.060.0914.191.7230CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6070067.000.1185.674.3112CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS30310	3	3.62	0.091	3.94	1.19	40
CRF-CS30313 3 3.81 0.091 3.94 1.23 40   CRF-CS30315 3 3.94 0.091 3.94 1.25 40   CRF-CS30400 3 4.00 0.091 3.94 1.30 40   CRF-CS30400 3 4.00 0.091 3.94 1.30 40   CRF-CS40409 4 4.56 0.091 4.19 1.57 30   CRF-CS40410 4 4.63 0.091 4.19 1.61 30   CRF-CS40411 4 4.68 0.091 4.19 1.63 30   CRF-CS40412 4 4.75 0.091 4.19 1.65 30   CRF-CS40413 4 4.81 0.091 4.19 1.67 30   CRF-CS40500 4 5.00 0.091 4.19 1.67 30   CRF-CS40501 4 5.06 0.091 4.19 1.74 30   CRF-CS60610 6 6.63 0.118 5.67 4.02 12   CRF-CS60614 6 6.75 0.118 </td <td>CRF-CS30311</td> <td>3</td> <td>3.69</td> <td>0.091</td> <td>3.94</td> <td>1.20</td> <td>40</td>	CRF-CS30311	3	3.69	0.091	3.94	1.20	40
CRF-CS3031533.940.0913.941.2540CRF-CS3040034.000.0913.941.3040CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.5930CRF-CS4041144.680.0914.191.6130CRF-CS4041244.750.0914.191.6330CRF-CS4041344.810.0914.191.6530CRF-CS4041444.880.0914.191.6730CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.0212CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS30312	3	3.75	0.091	3.94	1.21	40
CRF-CS3040034.000.0913.941.3040CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.5930CRF-CS4041144.680.0914.191.6130CRF-CS4041244.750.0914.191.6330CRF-CS4041344.810.0914.191.6530CRF-CS4041444.880.0914.191.6730CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.0212CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.3112CRF-CS6070267.130.1185.674.3912	CRF-CS30313	3	3.81	0.091	3.94	1.23	40
CRF-CS4040944.560.0914.191.5730CRF-CS4041044.630.0914.191.5930CRF-CS4041144.680.0914.191.6130CRF-CS4041244.750.0914.191.6330CRF-CS4041344.810.0914.191.6530CRF-CS4041444.880.0914.191.6730CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS30315	3	3.94	0.091	3.94	1.25	40
CRF-CS40410   4   4.63   0.091   4.19   1.59   30     CRF-CS40411   4   4.68   0.091   4.19   1.61   30     CRF-CS40412   4   4.75   0.091   4.19   1.63   30     CRF-CS40412   4   4.75   0.091   4.19   1.63   30     CRF-CS40413   4   4.81   0.091   4.19   1.65   30     CRF-CS40414   4   4.88   0.091   4.19   1.67   30     CRF-CS40500   4   5.00   0.091   4.19   1.72   30     CRF-CS40501   4   5.06   0.091   4.19   1.74   30     CRF-CS60610   6   6.63   0.118   5.67   4.02   12     CRF-CS60612   6   6.75   0.118   5.67   4.10   12     CRF-CS60700   6   7.00   0.118   5.67   4.24   12     CRF-CS60702   6   7.13   0.118	CRF-CS30400	3	4.00	0.091	3.94	1.30	40
CRF-CS4041144.680.0914.191.6130CRF-CS4041244.750.0914.191.6330CRF-CS4041344.810.0914.191.6530CRF-CS4041444.880.0914.191.6730CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6061466.880.1185.674.2412CRF-CS6070067.000.1185.674.3112CRF-CS6070267.130.1185.674.3912CRF-CS6070467.250.1185.674.3912	CRF-CS40409	4	4.56	0.091	4.19	1.57	30
CRF-CS40412 4 4.75 0.091 4.19 1.63 30   CRF-CS40413 4 4.81 0.091 4.19 1.65 30   CRF-CS40414 4 4.88 0.091 4.19 1.67 30   CRF-CS40500 4 5.00 0.091 4.19 1.67 30   CRF-CS40501 4 5.06 0.091 4.19 1.72 30   CRF-CS40501 4 5.06 0.091 4.19 1.74 30   CRF-CS60610 6 6.63 0.118 5.67 4.02 12   CRF-CS60612 6 6.75 0.118 5.67 4.10 12   CRF-CS60614 6 6.88 0.118 5.67 4.17 12   CRF-CS60700 6 7.00 0.118 5.67 4.31 12   CRF-CS60702 6 7.13 0.118 5.67 4.31 12   CRF-CS60704 6 7.25 0.118 5.67 4.39 12	CRF-CS40410	4	4.63	0.091	4.19	1.59	30
CRF-CS4041344.810.0914.191.6530CRF-CS4041444.880.0914.191.6730CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS40411	4	4.68	0.091	4.19	1.61	30
CRF-CS4041444.880.0914.191.6730CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS40412	4	4.75	0.091	4.19	1.63	30
CRF-CS4050045.000.0914.191.7230CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS40413	4	4.81	0.091	4.19	1.65	30
CRF-CS4050145.060.0914.191.7430CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS40414	4	4.88	0.091	4.19	1.67	30
CRF-CS6061066.630.1185.674.0212CRF-CS6061266.750.1185.674.1012CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS40500	4	5.00	0.091	4.19	1.72	30
CRF-CS6061266.750.1185.674.1012CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS40501	4	5.06	0.091	4.19	1.74	30
CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS60610	6	6.63	0.118	5.67	4.02	12
CRF-CS6061466.880.1185.674.1712CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912	CRF-CS60612	6	6.75				12
CRF-CS6070067.000.1185.674.2412CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912							
CRF-CS6070267.130.1185.674.3112CRF-CS6070467.250.1185.674.3912							
CRF-CS60704 6 7.25 0.118 5.67 4.39 12							

Part Number	Hose ID (in)	Ferrule ID (in)	Wall Thickness (in)	Length (in)	Weight Each (lbs)	Std. Carton
CRF-SS10108	1	1.50	0.059	2.29	0.20	200
CRF-SS10109	1	1.56	0.059	2.29	0.21	200
CRF-SS10110	1	1.63	0.059	2.29	0.21	200
CRF-SS10111	1	1.69	0.059	2.29	0.23	200
CRF-SS10112	1	1.75	0.059	2.29	0.23	200
CRF-SS10113	1	1.81	0.059	2.29	0.24	200
CRF-SS15200	1 1/2	2.00	0.059	2.36	0.27	128
CRF-SS15202	1 1/2	2.12	0.059	2.36	0.29	128
CRF-SS15204	1 1/2	2.25	0.059	2.36	0.27	80
CRF-SS15206	1 1/2	2.39	0.059	2.36	0.30	80
CRF-SS15208	1 1/2	2.50	0.059	2.36	0.35	80
CRF-SS20209	2	2.56	0.059	2.79	0.40	80
CRF-SS20210	2	2.62	0.059	2.79	0.43	80
CRF-SS20211	2	2.68	0.059	2.79	0.43	80
CRF-SS20213	2	2.81	0.059	2.79	0.44	80
CRF-SS20215	2	2.94	0.059	2.79	0.46	80
CRF-SS25302	2 1/2	3.12	0.059	3.11	0.56	60
CRF-SS25304	2 1/2	3.25	0.059	3.11	0.58	60
CRF-SS25306	2 1/2	3.39	0.059	3.11	0.60	60
CRF-SS25308	2 1/2	3.50	0.059	3.11	0.62	60
CRF-SS30309	3	3.56	0.098	3.94	1.27	40
CRF-SS30310	3	3.62	0.098	3.94	1.29	40
CRF-SS30311	3	3.69	0.098	3.94	1.3	40
CRF-SS30312	3	3.75	0.098	3.94	1.31	40
CRF-SS30313	3	3.81	0.098	3.94	1.33	40
CRF-SS30315	3	3.94	0.098	3.94	1.36	40
CRF-SS30400	3	4.00	0.098	3.94	1.40	40
CRF-SS40409	4	4.56	0.098	4.19	1.57	30
CRF-SS40410	4	4.63	0.098	4.19	1.59	30
CRF-SS40411	4	4.68	0.098	4.19	1.74	30
CRF-SS40412	4	4.75	0.098	4.19	1.76	30
CRF-SS40413	4	4.81	0.098	4.19	1.78	30
CRF-SS40414	4	4.88	0.098	4.19	1.82	30
CRF-SS40500	4	5.00	0.098	4.19	1.86	30
CRF-SS40501	4	5.06	0.098	4.19	1.89	30



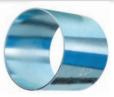
## Kuri-Krimp<sup>™</sup> Crimp Sleeves





#### Kuri-Krimp<sup>™</sup> 304 Stainless Steel Crimp Sleeves

Part Number	Hose ID (in)	Ferrule ID (in)	Wall Thickness (in)	Length (in)	Weight Each (lbs)	Std. Carton
CRS-SS10106	1	1.38	0.059	2.29	0.17	200
CRS-SS10108	1	1.50	0.059	2.29	0.20	200
CRS-SS10109	1	1.56	0.059	2.29	0.21	200
CRS-SS10111	1	1.69	0.059	2.29	0.23	200
CRS-SS15113	1 1/2	1.81	0.059	2.29	0.25	128
CRS-SS15200	1 1/2	2.00	0.059	2.36	0.27	128
CRS-SS15202	1 1/2	2.12	0.059	2.36	0.29	128
CRS-SS15204	1 1/2	2.25	0.059	2.36	0.29	80
CRS-SS15206	1 1/2	2.39	0.059	2.36	0.30	80
CRS-SS20207	2	2.44	0.059	2.79	0.37	80
CRS-SS20209	2	2.56	0.059	2.79	0.40	80
CRS-SS20210	2	2.62	0.059	2.79	0.43	80
CRS-SS20211	2	2.68	0.059	2.79	0.43	80
CRS-SS20213	2	2.81	0.059	2.79	0.44	80
CRS-SS20215	2	2.94	0.059	2.79	0.46	80
CRS-SS25300	2 1/2	3.00	0.059	3.11	0.54	60
CRS-SS25302	2 1/2	3.12	0.059	3.11	0.56	60
CRS-SS25304	2 1/2	3.25	0.059	3.11	0.58	60
CRS-SS25306	2 1/2	3.39	0.059	3.11	0.60	60
CRS-SS25308	2 1/2	3.50	0.059	3.11	0.62	60
CRS-SS30310	3	3.62	0.098	3.94	1.29	40
CRS-SS30312	3	3.75	0.098	3.94	1.31	40
CRS-SS30313	3	3.81	0.098	3.94	1.33	40
CRS-SS30314	3	3.88	0.098	3.94	1.35	40
CRS-SS30400	3	4.00	0.098	3.94	1.40	40
CRS-SS40404	4	4.25	0.098	4.19	1.60	30
CRS-SS40406	4	4.38	0.098	4.19	1.64	30
CRS-SS40408	4	4.50	0.098	4.19	1.68	30
CRS-SS40411	4	4.68	0.098	4.19	1.74	30
CRS-SS40412	4	4.75	0.098	4.19	1.76	30
CRS-SS40413	4	4.81	0.098	4.19	1.78	30
CRS-SS40415	4	4.94	0.098	4.19	1.82	30
CRS-SS40500	4	5.00	0.098	4.19	1.86	30
CRS-SS60604	6	6.25	0.118	5.67	3.81	12
CRS-SS60606	6	6.38	0.118	5.67	3.88	12
CRS-SS60608	6	6.50	0.118	5.67	3.95	12
CRS-SS60610	6	6.63	0.118	5.67	4.32	12
CRS-SS60612	6	6.75	0.118	5.67	4.41	12
CRS-SS60614	6	6.88	0.118	5.67	4.48	12
CRS-SS60700	6	7.00	0.118	5.67	4.56	12
CRS-SS60704	6	7.25	0.118	5.67	4.72	12
CRS-SS60706	6	7.38	0.118	5.67	4.81	12



#### Kuri-Krimp<sup>™</sup> Plated Steel Crimp Sleeves

Part Number	Hose ID (in)	Ferrule ID (in)	Wall Thickness (in)	Length (in)	Weight Each (lbs)	Std. Carton
CRS-CS10106	1	1.38	0.059	2.29	0.17	200
CRS-CS10108	1	1.50	0.059	2.29	0.19	200
CRS-CS10109	1	1.56	0.059	2.29	0.20	200
CRS-CS10111	1	1.69	0.059	2.29	0.22	200
CRS-CS15113	1 1/2	1.81	0.059	2.36	0.25	128
CRS-CS15200	1 1/2	2.00	0.059	2.36	0.25	128
CRS-CS15202	1 1/2	2.12	0.059	2.36	0.26	128
CRS-CS15204	1 1/2	2.25	0.059	2.36	0.27	80
CRS-CS15206	1 1/2	2.39	0.059	2.36	0.28	80
CRS-CS20207	2	2.44	0.059	2.79	0.34	80
CRS-CS20209	2	2.56	0.059	2.79	0.37	80
CRS-CS20210	2	2.62	0.059	2.79	0.40	80
CRS-CS20211	2	2.68	0.059	2.79	0.40	80
CRS-CS20213	2	2.81	0.059	2.79	0.42	80
CRS-CS20215	2	2.94	0.059	2.79	0.44	80
CRS-CS25300	2 1/2	3.00	0.059	3.11	0.50	60
CRS-CS25302	2 1/2	3.12	0.059	3.11	0.52	60
CRS-CS25304	2 1/2	3.25	0.059	3.11	0.54	60
CRS-CS25306	2 1/2	3.39	0.059	3.11	0.56	60
CRS-CS25308	2 1/2	3.50	0.059	3.11	0.58	60
CRS-CS30310	3	3.62	0.091	3.94	1.19	40
CRS-CS30312	3	3.75	0.091	3.94	1.21	40
CRS-CS30313	3	3.81	0.091	3.94	1.23	40
CRS-CS30314	3	3.88	0.091	3.94	1.25	40
CRS-CS30400	3	4.00	0.091	3.94	1.30	40
CRS-CS40404	4	4.25	0.091	4.19	1.54	30
CRS-CS40406	4	4.38	0.091	4.19	1.56	30
CRS-CS40408	4	4.50	0.091	4.19	1.58	30
CRS-CS40411	4	4.68	0.091	4.19	1.61	30
CRS-CS40412	4	4.75	0.091	4.19	1.63	30
CRS-CS40413	4	4.81	0.091	4.19	1.65	30
CRS-CS40415	4	4.94	0.091	4.19	1.68	30
CRS-CS40500	4	5.00	0.091	4.19	1.72	30
CRS-CS50509	5	5.56	0.118	4.57	2.58	18
CRS-CS50512	5	5.75	0.118	4.57	2.65	18
CRS-CS50515	5	5.94	0.118	4.57	2.74	18
CRS-CS60604	6	6.25	0.118	5.67	3.81	12
CRS-CS60606	6	6.38	0.118	5.67	3.88	12

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#### Kuri-Krimp<sup>™</sup> Plated Steel Crimp Sleeves (continued)

Part Number	Hose ID (in)	Ferrule ID (in)	Wall Thickness (in)	Length (in)	Weight Each (Ibs)	Std. Carton
CRS-CS60608	6	6.50	0.118	5.67	3.95	12
CRS-CS60610	6	6.63	0.118	5.67	4.02	12
CRS-CS60612	6	6.75	0.118	5.67	4.10	12
CRS-CS60614	6	6.88	0.118	5.67	4.17	12
CRS-CS60700	6	7.00	0.118	5.67	4.24	12
CRS-CS60704	6	7.25	0.118	5.67	4.39	12
CRS-CS60706	6	7.38	0.118	5.67	4.47	12
CRS-CS80808	8	8.50	0.118	6.50	5.95	4
CRS-CS80812	8	8.75	0.118	6.50	6.06	4
CRS-CS80814	8	8.88	0.118	6.50	6.15	4
CRS-CS80900	8	9.00	0.118	6.50	6.23	4
CRS-CS80902	8	9.13	0.118	6.50	6.32	4
CRS-CS80904	8	9.25	0.118	6.50	6.41	4
CRS-CS80908	8	9.50	0.118	6.50	6.58	4



#### Kuri-Krimp<sup>™</sup> Aluminum Crimp Sleeves

Part Number	Hose ID (in)	Sleeve ID (in)	Wall Thickness (in)	Weight Each (Ibs)	Std. Carton
CRS-AL20209	2	2.56	0.079	0.18	100
CRS-AL20210	2	2.63	0.079	0.18	100
CRS-AL20211	2	2.69	0.079	0.19	100
CRS-AL30310	3	3.63	0.079	0.35	36
CRS-AL30312	3	3.75	0.079	0.36	36
CRS-AL30313	3	3.81	0.079	0.37	36
CRS-AL30400	3	4.00	0.079	0.39	36
CRS-AL40411	4	4.69	0.098	0.60	36
CRS-AL40412	4	4.75	0.098	0.61	36
CRS-AL40413	4	4.81	0.098	0.62	36
CRS-AL40500	4	5.00	0.098	0.64	36

#### Kuri-Clamp<sup>™</sup> Center Punch Clamps



Carbon Steel



Stainless Steel

Part Number Carbon Steel	Stainless Steel	Size (in)	Pieces Per Box	Weight Per Box (lbs)	Standard Box
BAND WIDTH - 3/8"					
CPCS03	CPSS03	13/16	100	3.60	1
CPCS31	CPSS31	1 3/8	100	4.60	1
BAND WIDTH - 5/8"					
CPCS04	CPSS04	1	100	8.30	1
CPCS05	CPSS05	1 1/4	100	8.70	1
CPCS06	CPSS06	1 1/2	100	9.70	1
CPCS07	CPSS07	1 3/4	100	10.60	1
CPCS08	CPSS08	2	100	11.50	1
CPCS09	CPSS09	2 1/4	100	12.60	1
CPCS10	CPSS10	2 1/2	50	6.80	1
CPCS11	CPSS11	2 3/4	50	7.30	1
CPCS12	CPSS12	3	50	7.70	1
CPCS14	CPSS14	3 1/2	50	8.70	1
CPCS16	CPSS16	4	25	4.90	1
CPCS18	CPSS18	4 1/2	25	5.50	1
CPCS20	CPSS20	5	25	5.90	1
CPCS24	CPSS24	6	25	6.80	1
CPCS26	CPSS26	6 1/2	25	7.10	1
CPCS28	CPSS28	7	25	7.40	1
CPCS32	CPSS32	8	25	8.20	1

## **Technical Bulletin**

### How are Tigerflex<sup>™</sup> BIOFUEL FRIENDLY PRODUCTS<sup>™</sup> hoses different from other brand hoses?

Tigerflex<sup>™</sup> brand hoses are well known for their lightweight, easyto-handle and long-life features.

Tigerflex<sup>™</sup> brand **BIOFUEL FRIENDLY PRODUCTS<sup>™</sup>** drop and vapor recovery hoses are revolutionary! They are constructed with non-permeable thermoplastic polyurethane (TPU) tubes. Traditional thermoplastics, while providing exceptional lightweight and flexibility features, were not chemically compatible for fuels of more than 30% ethanol blended (E30).

But the new Tigerflex<sup>™</sup> brand **BIOFUEL FRIENDLY PRODUCTS<sup>™</sup>** hoses, utilizing the latest advancements in TPU development, have been lab and field proven to remain crack and leak resistant under the harshest conditions. They easily handle conventional oxygenated and reformulated gasoline blends; ethanol blends (up to E98); ultra low sulfur (ULS) diesel; and bio-diesels (up to B100 which meet ASTM D 6751 criteria). The Tigerflex<sup>™</sup> **BIOFUEL FRIENDLY PRODUCTS<sup>™</sup>** hoses are truly revolutionary!

#### 2 What are ethanol blends – E10, E85, E98, E100?

E10 (gasohol) is a fuel blend containing 10% ethanol and 90% gasoline; E85 is 85% ethanol and 15% gasoline; E95 is 95% ethanol and 5% gasoline; and so on. E100 is ethyl alcohol (grain alcohol). Many common plastics and rubbers are chemically compatible with E100. Yet, E100 is almost never used or transported in the U.S. fuel industry because E100 is taxed as alcohol (liquor). Gasoline is added to render the fuel unsuitable for human consumption, and thus not subject to alcohol taxes. Adding gasoline changes the chemical composition whereas materials that are compatible with E100 are not compatible with an E98 fuel blend.

Kuriyama<sup>®</sup> **BIOFUEL FRIENDLY PRODUCTS™** products can be used with all percentage blends of ethanol fuel.

Metal couplings compatibility: Aluminum (good), Stainless Steel (excellent).

#### What is biodiesel – B20, B100?

Biodiesel is a non-fossil fuel alternative to petroleum diesel. ASTM International has developed standard D6751 as the specification standard for 100% biodiesel (B100). Biodiesel is generally used for blending with petroleum diesel. For example, B20 is a fuel blend of approximately 20% biodiesel and 80% traditional petroleum diesel. ASTM D6751 is the specification for biodiesel fuels that needs to be met, irrespective of the feedstock source and/or processing method. Biodiesels which meet the ASTM D6751 criteria have the same chemical compatibilities to hoses and accessories as traditional petroleum diesel.

It is suggested that biodiesel fuels be sourced from accredited BQ-9000 Producers and BQ-9000 Marketers to assure the biodiesel fuel meets the ASTM D6751 criteria.

Kuriyama<sup>®</sup> **BIOFUEL FRIENDLY PRODUCTS™** hose products can be used with all percentage blends of biodiesels meeting the ASTM D6751 criteria.

Metal couplings compatibility: Aluminum (excellent), Stainless Steel (excellent).

### **4** What type of hose should be used for denatured ethanol (E95-E98) unloading at terminals?

We suggest our Alfagomma<sup>®</sup> series-T629AA – 150 PSI Black Biofuel Petroleum Suction Hose for bulk ethanol terminals. The Alfagomma<sup>®</sup> T629AA is a specially blended, heavy duty neoprene hose, well suited for these types of applications.

The Tigerflex<sup>™</sup> Tigerdrop<sup>™</sup> drop hose is a lightweight, userfriendly hose, designed for tank truck applications. However, it also has been used successfully at well maintained bulk ethanol facilities.

**IMPORTANT:** Extra care must be taken when handling denatured ethanol (E95-E98) – even more so than with traditional petroleum based fuels. The following procedures must be followed to ensure maximum hose service life:

1. Hose should be drained and unhooked from the pump after each use. Properly draining and unhooking the hose will protect it from damaging denatured ethanol vapors. American Petroleum Institute Recommended Practices No. 1007, section 5.4, states that, "When pumping is finished the driver should walk the suction hose to the pump... Place any residual product into approved container."

2. Hose should be kept in a properly designed, (  $\cap$  shaped), storage rack when not in use. Use of storage rack will help ensure the hose is properly drained after each use; as well protect the hose from being accidentally run over!

3. Keep hose in a shaded area when in use. Do not expose hose to direct sunlight. Excessive UV exposure can damage any hose.

4. Thoroughly inspect hose before, during and after each use

If the hose is not fully drained after each use the denatured ethanol remaining in the hose can release damaging vapors, this is especially true at high temperatures. When the air temperature exceeds 90° F, the temperature of ground, concrete, asphalt or stone surface upon which the hose may be lying can be in excess of 150° F. At temperatures in excess of 110°F denatured ethanol has been shown to percolate, releasing damaging vapors. These vapors can permeate the hose at a much higher rate than the liquid fuel, and can substantially reduce the service life of the hose. Ethanol vapors are extremely damaging, more so than petroleum based fuel vapors.

#### Can I leave gasoline or E85 inside the hoses when not in use?

We strongly recommend that all fuel transfer hoses are fully drained after each use. Per American Petroleum Institute Recommended Practices No. 1007, Section 4, when unloading to underground storage tanks, to "Disconnect the delivery hose at the tank truck and "roll" it to the receiving tank to be sure it is completely drained." In addition, vapor recovery hoses used in distribution terminal loading racks must be regularly inspected and drained as fuel will tend to collect in the hoses. At high temperatures these fuels can percolate, releasing damaging vapors which can attack the hose and shorten service life.

#### 6 Do drop and vapor recovery hose need to be grounded?

For added safety, Kuriyama of America, Inc. strongly suggests that any hose assembly used to transfer fuel or fuel vapors be bonded to ground before being put into service. (Refer to Hose Assembly Coupling Installation Suggestions in the catalog.) Embedded grounding wires should be physically extracted from the hose and bonded (connected) to ground through the metal coupler, or by other means.

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## **Technical Bulletin**

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American Petroleum Institute Recommended Practice No. 2003 (API RP-2003) and the National Fire Protection Association (NFPA) Standard No. 385 both state that hoses transferring gasoline to underground storage tanks (UST's) need not be bonded as long as they are used with "closed (tight) connections". API defines "closed connections" as a connection in which before flow starts and is broken after flow is completed. In summary, for gravity drop and vapor recovery applications, the user must make sure the hose assemblies are properly connected before starting the flow. Static dissipating and conductive hose tube material offer an added dimension of safety. Nonetheless, the electrical resistance of any hose transferring gasoline should measure less than 10 ohms (<10 $\Omega$ ).

On all Tigerflex<sup>™</sup> BIOFUEL FRIENDLY PRODUCTS<sup>™</sup> hoses: a) "USE WITH CLOSED CONNECTIONS" is printed on the layline;

A bright red PVC spiral band imprinted with "WARNING b) GROUND HELIX WIRE (LESS THAN 10 OHMS" is attached to each hose at approximately 10-ft. intervals.

#### How do I check a hose or hose assembly for continuity, or "less than 10 ohms"?

A continuity meter is a simple device that shows if a circuit is continuous; the light goes on when the probes are connected to either end of the hose or hose assembly, indicating continuity. Note: smaller continuity meters may be more accurate than larger-sized devices.

A common multimeter can also be used to measure a hose assembly for less than 10 ohms resistance. The less the amount of resistance, the easier the electrons flow through to ground. The electrical symbol for ohms is  $\Omega$ .

Either of both methods can be used to test whether a hose assembly is "good" to put into service. Either device can be found at hardware stores and home centers. Devices vary, but, in general, with either device, simultaneously touch one probe to each metal coupling on the ends of the hose assembly. A "good" hose assembly with be indicated by either the light going on, or the reading of less than 10 ohms (Ref. API RP-2003; NFPA RP-77). For unassembled hoses, simply touch one probe to the grounding wire at each end of the hose.

#### **General Chemical Resistance of** Alfagomma<sup>®</sup> Rubber Hose and Kuriyama - Couplings<sup>™</sup> Gaskets

Common Name	General Properties
BUNA, BUNA-N, NBR	Excellent oil resistance.
or Nitrile	Good physical properties.
SBR	Good physical properties,
(Styrene-Butadiene	including abrasion
Rubber)	resistance. Not oil resistant.
Viton®	Excellent chemical and heat resistance. Excellent biofuel resistance.

The electrical resistance (ohms) of a wire is primarily dependent upon the length, size and type of material of the wire. Copper is the best metal (least ohms resistance). The longer the hose the more wire and thus the greater the electrical resistance of the hose's grounding wire. A typical drop and vapor recovery hose assembly is 20 feet. Tigerflex<sup>™</sup> drop and vapor recovery hoses up to 40 feet in length should measure less than 10 ohms.

#### Should one use banding sleeves or banding coils?

Screwing on approximately 12-inch length banding sleeves provides both a smooth surface for banding clamps, and also provides support behind the coupling - the most common stress area of a hose assembly. Threading a banding coil between the hose helixes provides a smoother surface for banding. Both have been used quite successfully.

#### Care, Maintenance and Storage of Tigerflex<sup>™</sup> Hose.

Proper storage conditions and handling procedures can enhance and substantially extend the ultimate life of Tigerflex<sup>™</sup> hose.

Hose has limited life and the user must be alert to signs of impending failure. The service life of our hose is dependent upon the user's application. Since we have no control over the way in which the hose is used, we do not warrant our hose for any particular service life.

Tigerflex<sup>™</sup> hose should not be subjected to any form of abuse in storage or service. Care should be taken to protect the hose from heavy load factors. Hose should be stored flat on smooth surfaces, and should not be stacked more than six coils high. Stacking hose higher than this could cause the compression load factor on the bottom coil to exceed the hose's design load limitations, causing the bottom coil to flatten out.

Hose should not be stored outdoors due to potential damage from the elements, which may shorten hose life.

Hose should not be stored in an upright manner, as this can cause the round coils to become egg shaped, and that stress can cause a deterioration of the hose.

Hose should not be kinked or run over by any equipment. In the handling of larger ID hose, dollies should be used in transporting whenever possible. Slings or handling rigs, properly placed, should be used to support heavier hose.

#### **General Biofuel Resistance of** Kuriyama - Couplings™

_		
Aluminum		
Biodiesel	Ethanol	Gasoline/Diesel
Excellent	Good	Excellent
Stainless Steel		
Biodiesel	Ethanol	Gasoline/Diesel
Excellent	Excellent	Excellent

Viton is a registered trademark of DuPont Performance Elastomers.

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Because we continually examine ways to improve our products, we reserve the right to alter specifications without prior notice.

## Chemical Resistance Guide for Tigerflex<sup>™</sup> and Alfagomma<sup>®</sup> Fuel Transfer Hoses

		DH		DH		) & VAPR	0	1					T629AA	
	68°F	104ºF		104ºF	68ºF	104ºF		104ºF		104ºF	68ºF			68ºF
ASTM Fuel #1 Oil	E	E	E	G	-	-	E	E	G		E	E	E	E
ASTM Fuel #3 Oil	E	E	G	L	-	-	E	E	E	G	E	E	E	E
ASTM Fuel A	E	E	E	G	X	Х	G	G	-	-	E	E	E	E
ASTM Fuel B	G	L	G	L	X	Х	G	<u>L</u>	-	-	E	E	L	E
ASTM Fuel C	G	L	L	U	X	Х	G	L	-	-	E	E	L	E
Benzene	L	U	X	Х	-	-	L	U	U	U	U	U	Х	U
Biodiesel Liquid Fuel (B20) **	E	E	G	L	Х	Х	G	G	-	-	L	L	E	L
Biodiesel Liquid Fuel (B100) **	E	E	G	L	X	Х	G	G	-	-	L	L	E	L
Biodiesel Vapor (B20)	E	E	E	G	E	E	G	L	G	L	L	L	E	L
Biodiesel Vapor (B100)	E	E	E	G	E	E	G	L	G	L	L	L	E	L
Butane	E	E	G	L	-	-	E	E	E	E	E	E	E	E
s, L <mark>Castor Oil</mark> Gebenut di <mark>51 Memorial Dri</mark>	G	G,	b, G	L L		harar	• 8 <mark>68-</mark>	had ac	G	U			LL E	1.1.2.0
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Gasoline Liquid Fuel (Conventional, Oxygenated & Reformulated)	E	E	E	G	Х	Х	G	G	-	-	E	E	E	E
Gasoline Vapor (Conventional,	E	E	E	G	E	E	G	G	G	G	E	E	E	E
Oxygenated & Reformulated)		L L	L L	u	L L	L L	u	u		u	L .	L L	L L	
Core Oil	E	E	-	-	-	-	E	E	E	E	-	-	-	-
Corn Oil	-	-	G	L	-	-	-	-	E	G	E	E	E	E
Cottonseed Oil	E	E	G	L	-	-	E	E	G	L	L	L	E	L
Crude Oil - Sour	Ε	Ε	G	L	-	-	E	E	Ε	E	-	l -	L	-
Crude Oil - Sweet	İΕ	Ε	G	L	-	-	E	E	E	E	G	G	L	G
Cyclohexane	Ē	Ē	X	X	-	- 1	-	-	L	U	G	G	Ē	G
Diesel Liguid Fuel *	Ē	Ē	Ē	Ē	Х	Х	G	G	-	-	Ĕ	Ē	Ē	Ē
Diesel Oil	-	-	G		-	-	-	-	L	U	Ē	Ē	Ē	Ē
Diesel Vapor	Ε	E	Ē	G	E	E	G	G	Ē	G	E	E E	E	E E
Dynamo Oil		<u> </u>	G	Ĭ		<u> </u>	-	<u> </u>	E	G	<u> </u>			
Ethanol Liguid Fuel (E85) **	E	E	G	G	X	X	1		-	-	1	<u>i</u> .	E	<b>i</b> 1
Ethanol Liquid Fuel (E98) **	G		G	i i	<del>Î</del>	X			-	-			Ē	
Ethanol Vapor (E85) *	E	E	G	G	Ê	G			G	U			E	
Ethanol Vapor (E98) *	G		G		G				G				E	
Ethyl Alcohol (E100)	G	G	G	G			G						E E	
Ethyl Tertiary Butyl Ether (ETBE)	G	G		U	-	-	6				<u> </u>		<u> </u>	
Fuel Oil	E E	F	G		-	-	L		<u> </u>		-	-	E	-
	-						-	-	<u>.                                    </u>				<u>.</u>	
Gas Oil	-	-	G		-	-	-	-	E	G	-	-	-	-
Grease	<u>-</u> Е	 F	G		-	-	- E	-	E		E	E	E	E
Isomerate		<u> </u>	G		-	-		G	-	-	-	-	-	
Iso-octane	E	E	E	G	-	-	E	G	G		E	E	E	E
Isopropyl Alcohol	-		G		-	-	-	-	E	G				
Jet Fuels	G		G	L	X	X	-	-	-	-	E	E		E
Kerosene	E	G	G	L	X	X	E	G	U	U	E	E	E	E
Kerosene Vapor	E	G	E	G	E	G	E	G	G		E	E	E	E
Ketones	-	-	X	Х	-	-	-	-	U	U			L	
Lacquer Thinners	G	-	X	Х	-	-	G	-	<u> </u>	U	U	U	X	U
Lard Oil	E	G	G		-	-	E	G	E	G	E	E	E	E
Lubricating Oil	E	E	G	L	-	-	E	E	E	L	-	-	L	-
Linseed Oil	E	E	G	<u> </u>	-	-	E	E	E	E	G	G	E	G
Machine Oil	E	E	G	L	-	-	E	G	E	G	-	-	-	-
Methanol (M85)	G	G	G	L	-	-	G	L_L	U	U	-	-	ĻL	-
Methyl Alcohol	L	U	G	L	-	-	L	U	L	U	E	E	E	E
Methyl Ethyl Ketone (MEK)	L	U	Х	Х	-	-	L	U	U	U	U	U	Х	U
Methyl Tertiary Butyl Ether (MTBE)	G	G		U	-	-	L	L		U	U	U	-	U
Mineral Oils	E	E	G	L	-	-	E	E	E	G	E	E	E	E
Mineral Spirits	-	-	L	U	-	-	-	-	-	-	G	G	L	G
Napthalene	-	-	Х	Х	-	-	-	-	L	U	U	U	Х	U
Napthas	E	E	G	L	-	-	E	E	U	U	U	U	L	U
Natural Gas	ÌΕ	Ε	G	L	-	-	E	E	Ē	E	G	G	E	G
Oils and Fats	İΕ	E	G	L	-	-	E	E	E	G	-	-	-	-
Petrol *	Ē	Ē	Ē	E	Х	Х	G	G	U	U	E	Ε	E	E
Petroleum Ether		-	G	Ē	-	-	-	-	Ĺ	Ľ	G	G	Ē	G
Petroleum Oils	Ε	E	G	Ē	-	-	E	E	Ē	G	Ē	Ĕ	X	Ĕ
Sour Gasoline *	Ē	G	Ť	Ū	Х	Х	G	G	-	-	-	-	-	-
Soy Bean Oil	G	G	G	Í	-	-	G	Ĩ	G	U	E	Ε	Ε	Ε
Soya Oil	- u	-	G	l ī	-	-	-	-	E	G	-	<u> </u>	 	<u> </u>
Spindle Oil		-	G			-	-	-	Ē	L	-	-	-	-
Tall Oil	-	-		L U	-	-	-	-		U	E	E	E	E
Tertiary Amyl Methyl Ether (TAME)	-	-		U	-	-	-	-			<u> </u>		<u> </u>	
		- U									- U	- U	X	- U
Toluene Troin Oil		1	i	X	-	-	L	i				i	1	
Train Oil	-	-	-	-	-	-	-	-	E	U	-	-	-	-
Transformer Oil	-	-	-	-	-	-	-	-	-	-	G	G		G
Transmission Fluid	G	G	G	<u>    L                                </u>	-	-	G	G	E		E	E	E	E
Turbine Oil	-	-	G	L	-	-	-	-	E	L	-	-	-	-
Turpentine	E	G	X	X	-	-	E	G		U	U	U	E	U
Ultra Low Sulfur Diesel *	E	E	G	G	Х	Х	G	G	-	-	-	-	-	-
Vegetable Oil	-	-	E	G	-	-	-	-	E	L	-	-	E	-
White Gasoline *	E	G	G	G	Х	Х	G	G	-	-	-	-	-	-

E = Excellent G = Good L = Limited U = Unsatisfactory X - Not Recommended \* Aromatic content not exceeding 50% \*\* ASTM D5798, D4806 or D6751

## **Cautionary Statement**

All Products sold and distributed by Kuriyama of America, Inc. are in the nature of commodities and they are sold by published specifications and not for particular purposes, uses or applications. Purchaser shall first determine their suitability for the intended purposes, uses or applications and shall either conduct its own engineering studies or tests, or retain qualified engineers, consultants or testing laboratories and consult with them before determining the proper use, suitability or propriety of the merchandise or Products for the intended purposes, uses or applications.

Kuriyama of America, Inc. (Seller) does not recommend the Products for any particular purpose, use or application, and the Purchaser or user thereof shall assume full responsibility for the suitability, propriety, use and application of the Products. Purchaser shall follow all instructions contained in Seller's catalogs, brochures, technical bulletins and other documents regarding the Products. The Products, including but not limited to, hose, tubing or couplings, may fail due to the use or conveyance of substances at elevated or lowered temperatures or at excessive pressure, the conveyance of abrasive, injurious, flammable, explosive or damaging substances.

Hose or tubing used in bent configurations will be subjected to increased abrasion. Hose clamps or couplings may loosen after initial installation and all sections of hose and tubing including connections, couplings, clamps, conductivity and bonding should be inspected frequently, regularly and consistently, and should be replaced, adjusted or re-tightened for the avoidance of leakage, for the prevention of injuries or damages, and for general safety purposes. Except as indicated in its Limited Warranty, Seller shall not be liable or responsible for direct or indirect injuries or damages caused by or attributed to the failure or malfunction of any Products sold or distributed by it.

Purchasers or users of the Products should frequently and consistently undertake inspections and protective measures with respect to the use and application of Products, which should include the examination of tube and cover, conditions of the hose or tubing, and the identification, repair or replacement of sections showing cracking, blistering, separations, internal and external abrasions, leaking or slipped couplings or connections and make proper proof tests.

## **Limited Warranty**

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