

## FRA Reflective Conspicuity Railcar Tape Data Sheet

Heskins FRA Railcar Conspicuity Tape is an approved micro prismatic retroreflective tape with a permanent pressure sensitive adhesive for easy and permanent application on to railcars, locomotives and rolling stock. No glue or heat sealing is required.

Heskins FRA Conspicuity Tape is produced in both white and yellow, produce in rolls, strips and kiss cut format. The industry leading adhesive allows for low temperature applications and durability.

**Performance:** FRA-224 Certified

**Durability:** 10 years vertical exposure only

**Orientation:** Omni-directional

**Face:** Acrylic: retroreflective film with microprisms

**Adhesive:** Low temperature pressure sensitive

**Liner:** Polymeric film

**Application Surface:** Metal & Painted metal

### Benefits:

- Reflection performance is 200% higher than required by Federal regulations.
- Its specially formatted metalized production negates the need for chemical or heat edge sealing.
- Heskins FRA has class leading reflection performance from all angles at night, dusk and dawn,
- The inherent marking codes are protection from abrasion to provide confidence of ongoing compliance throughout the lifetime of the product.
- The class leading industry ensures that it can be applied at low temperatures.

### Output:

- 4"x50-yard rolls
- Pre-cut strips
- Easy to apply kiss cut pieces
- Customer specified options

### Applications:

- Railcars
- Locomotives



**Retroreflectivity:**

Heksins FRA exceeds all minimum coefficients of retroreflection requirements for FRA 224 (49CFR 224) as shown in **Table A**.

**Table A**

Minimum coefficient or retroreflection

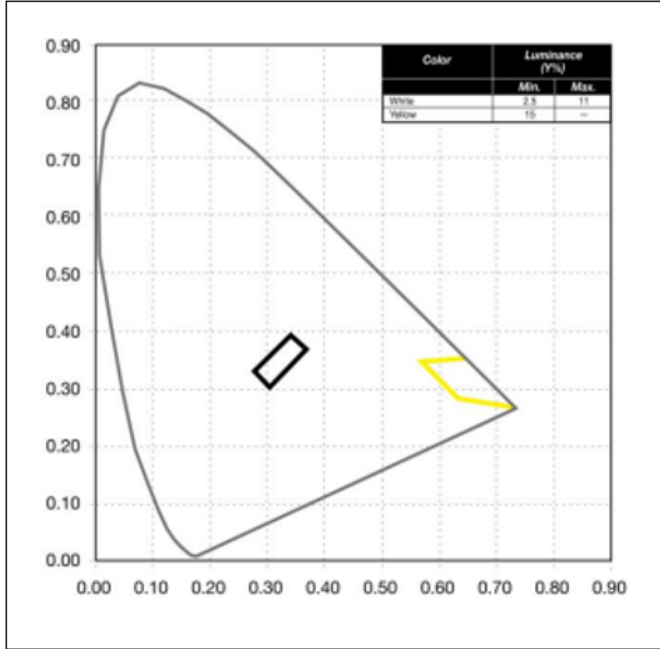
Item	Observation Angles		
White	0.2in	-4	250
		30	250
		40	60
	0.49in	-4	65
		30	65
		40	15
Red	0.2in	-4	60
		30	60
		40	15
	0.49in	-4	10
		30	10
		40	4

**Colors and Specification Limits:**

Heksins FRA meets the color and minimum luminance requirements for FRA-224 (49 CFR 224) and ASTM D4956 Type V shown in Figure A.

**Figure A: CIE Color Diagram**





Heskins FRA meets the current applicable requirements for the following specifications:

FRA 224 (49 CFR 224)	US
ASTM D4956	North America

Heskins suggests you obtain the current requirements from your local agency and ensure product conformance with such requirements. Your Heskins representatives can assist you in this regard.

Heskins always recommends that you check regulatory requirements and applications to ensure suitability, our team can help you with this.

Heskins FRA contains the FRA-224 certification seen in Figure B:



**Characteristics:**

Property	FMVSS 108 Requirement	DOT C-2 conspicuity tape
<b>Thickness</b>	NA	Sealing Type – 0.0159~0.0175in Metallizing Type – 0.0118~0.0134in
<b>Gloss</b>	NA	100



<b>Dimensional stability</b>	Less than 0.13in change on 9in x 9in panel	Pass
<b>Flexibility</b>	NO Cracking	Pass
<b>Peel adhesion, lbf/in</b>	Cracking Cracking	180° FINAT FTM I
<b>Tensile strength, lbf/in</b>	172.431	Lloyd, 11.24 lbf load cell
<b>Min. Application temperature</b>	NA	59°F
<b>High pressure wash test</b> 45° angle, 83bar, 3in distance	NA	Pass
<b>Adhesion</b> 90° hanging weight ASTM D4956	Less than 2in movement	Pass
<b>Peel adhesion</b> 120in/minute, 130° peel angle	NA	Degreased aluminum: 5.255 lb/in
<b>Chemical resistance</b>	NA	Not effected by toluene, #2 diesel fuel, TSP detergent, xylene
<b>Corrosion resistance</b> ASTM B-117 5% Salt spray for 1000 hours	NA	No effect
<b>Impact resistance</b>	No damage outside impact	Pass
<b>Resistance to chemicals (months)</b>	8	PSTC-35
<b>Resistance to motor oil Life (months)</b>	Excellent 12 to 24	PSTC-35 PSTC-9
Room temperature 8.2ft - 0.99 lb, 0.645in tip		
<b>Impact resistance</b> Cold temperature 4.9ft -0.99 lb, 0.645in tip at -68°F	No damage outside impact	Pass

\*FRA-224 and ASTM D4956 Requirement Heskins Limited further warrants that Heskins A5DOT will retain its effectiveness for its intended use, and will meet the stated minimum values for coefficient of retroreflection (“performance warranty”) as set forth in accordance with the following standards.

SKU (Color)	RAL
<b>H6602R (Red)</b>	3020
<b>H6602Y (Yellow)</b>	1032
<b>H6602W (White)</b>	7004
<b>DOT2_RW66 (Red / White)</b>	3020 / 7004



## Application Information:

For further information please do contact the Heskins team.

## Instructional Bulletins:

**H6602R (Red)**

3020

### Where to Apply:

Please check for any changes to local, state or Federal regulations that are relevant to Conspicuity Tape markings. For railroad freight cars, tank cars, flat cars and locomotives exemplary standards include section 106 from 49 CFR Part 224. Vertical or horizontal applications are described, including illustrations. The type of application required is dependent on the type of car.

### Maintenance:

Regular cleaning is recommended to ensure maximum performance for vehicle identification day and night. The following cleaning methods are recommended.

A.) By hand with a sponge, cloth, or other non-abrasive media using mild detergent and water.

B.) Pressure washed according to the following parameters:

- Maximum Pressure: 1200 psi
- Maximum wash temperature: 140°F
- Water jets must be a minimum of 12" from the FRA
- Spray water jets at an angle of 90° (±45°) from the surface
- Cleaning solution should have a pH of 3-11. Follow dilution ratios of cleaning solutions per manufacturer recommendations.

### Substrates:

The application of Heskins FRA is limited to properly prepared metal and painted metal substrates. Users are urged to carefully evaluate, under actual use conditions, any film application to other substrates. For painted surfaces follow manufacturer's recommendations for drying and curing. Failure of film caused by other substrates, materials, contamination, or improper surface preparation is not the responsibility of Heskins.

### The following Warranty is limited to North America.

#### WARRANTY:

Heskins products are warranted to be free from defects in material and workmanship for one year from date of purchase. It is expressly agreed and understood that Heskins sole obligation and purchaser's exclusive remedy under this warranty, under any other warranty, express or implied, or otherwise, shall be limited to repair or replacement of defective product without charge at Heskins plant or at the location of product (at Heskins election), or in the event replacement or repairs is not commercially practical, to Heskins issuing purchaser a credit reasonable in light of the defect in the product.

Heskins further warrants that FRA ("products") will retain its effectiveness for its intended use ("Performance Warranty") as set forth in accordance with the following standards:

#### PERFORMANCE WARRANTY:

If within ten (10) years from the initial date of installation, the Product deteriorates due to natural causes to the extent that the product is ineffective for its intended purpose when viewed from a moving vehicle under normal daytime or nighttime driving



conditions, Heskins will furnish a replacement amount of like Product at no cost to enable the installed surface to be restored to its original effectiveness.

### **CONDITIONS:**

This warranty shall be effective only if all of the following conditions are met: Fabrication and/or installation must occur within one (1) year from the date of purchase. The failure must have resulted solely from a manufacturing defect or deterioration of the product due to natural causes under the performance warranty. Without limiting the generality of the foregoing, there is no warranty for the failure of the sheeting due to improper fabrication, improper storage, handling, installation, maintenance, failure of the substrate, vandalism or mischief. Slight color fading, cracking, chalking, edge lifting, or slight reduction in gloss or reflectivity will not materially detract from appearance and does not constitute a breach of warranty.

Heskins has published instructional bulletins pertaining to the storage, handling, and cleaning of product, approved substrates, and application procedures (collectively, the “procedures”). The product must have been processed and applied to blank, clean material in accordance with the procedures, as such may be amended from time to time. Heskins reserves the right to reject any warranty claim where the fabricator or installer cannot satisfactorily prove or demonstrate that the Heskins procedures were utilized. The date of installation, warranty registration, and claim procedures established by Heskins must be followed, and failure to follow such procedures shall void this warranty. Replacement product carries only the unexpired warranty portion of the product it replaces. The product must be properly stored and applied within the shelf-life as stated in the applicable Heskins product data sheet including adhesive and other material product data sheets.

### **INDEPENDENT TESTING REQUIRED**

All statements, technical information and recommendations about Heskins products are based upon tests and information believed to be reliable but do not constitute a guarantee or warranty of any kind. All Heskins products are sold with the understanding that purchaser has independently determined the suitability of such products for its intended and other purposes.

**THIS WARRANTY IS GIVEN IN LIEU OF ALL OTHERS. ANY AND ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED. NO WAIVER, ALTERATION, ADDITION OR MODIFICATION OF THE FOREGOING CONDITIONS SHALL BE VALID UNLESS MADE IN WRITING AND MANUALLY SIGNED BY AN OFFICER OF HESKINS.**



### LRV Test Results

SKU (Color)	RAL	Pantone	Av. LRV	Range
H6602R (Red)	3020	187 U	15.2	10.4
H6602Y (Yellow)	1032	7406 U	43.7	12.6
H6602W (White)	7004	422 U	38.9	16.1
DOT2_RW66 (Red / White)	3020 / 7004	187 U / 422 U	15.2 / 38.9	16.1 / 10.4

All the above data is for reference only.

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