



# Refined Products Pipeline Codes and Specifications

**Inland Corporation**  
**J.C. Nolan Pipeline CO., L.L.C**  
**Sunoco Pipeline L.P.**  
(Eastern Area & **Beaumont**/Hebert Pipeline Systems)

**March 1, 2022** **May 1, 2024**

**TABLE OF CONTENTS**

|  |             |
|--|-------------|
|  | <b>Page</b> |
| SHIPMENT ACCEPTANCE TERMS  | 4           |
| ADDITIONAL PRODUCTS FOR WHICH SPECIFICATIONS HAVE NOT BEEN ISSUED                            | 5           |
| TABLE 1 - SEASONAL VAPOR PRESSURE, DISTILLATION AND VAPOR LOCK PROTECTION CLASS REQUIREMENTS | 6           |
| TABLE 2 – ADDITIVE APPROVALS AND PROHIBITIONS  | 7           |

**PRODUCT GRADE SPECIFICATIONS**

**CONVENTIONAL GASOLINE BLENDSTOCK FOR OXYGENATE BLENDING**

**CBOB - 87 Octane after DFE blending at 10 percent ethanol by volume**

| <b>Product Code <sup>(1)</sup></b> | <b>Product Designation</b> | <b>Max RVP (psi)</b> | <b>Page</b> |
|------------------------------------|----------------------------|----------------------|-------------|
| 87CB78                             | Summer CBOB                | 7.8                  | 9           |
| 87CB80                             | Summer CBOB                | 8.0                  | 9           |
| 87CB90                             | Summer CBOB                | 9.0                  | 9           |
| 87CB100                            | Summer CBOB                | 10.0                 | 9           |
| 87CB125                            | Winter CBOB                | 12.5                 | 9           |
| 87CB135                            | Winter CBOB                | 13.5                 | 9           |
| 87CB145                            | Winter CBOB                | 14.5                 | 9           |
| 87CB150                            | Winter CBOB                | 15.0                 | 9           |
| 87CB155                            | Winter CBOB                | 15.5                 | 9           |

**CBOB - 93 Octane after DFE blending at 10 percent ethanol by volume**

|         |             |      |   |
|---------|-------------|------|---|
| 93CB78  | Summer CBOB | 7.8  | 9 |
| 93CB80  | Summer CBOB | 8.0  | 9 |
| 93CB90  | Summer CBOB | 9.0  | 9 |
| 93CB100 | Summer CBOB | 10.0 | 9 |
| 93CB125 | Winter CBOB | 12.5 | 9 |
| 93CB135 | Winter CBOB | 13.5 | 9 |
| 93CB145 | Winter CBOB | 14.5 | 9 |
| 93CB150 | Winter CBOB | 15.0 | 9 |
| 93CB155 | Winter CBOB | 15.5 | 9 |

**REFORMULATED GASOLINE BLENDSTOCK FOR OXYGENATE BLENDING**

**RBOB - 87 Octane after DFE blending at 10 percent ethanol by volume**

| <b>Product Code <sup>(1)</sup></b> | <b>Product Designation</b> | <b>Max RVP (psi)</b> | <b>Page</b> |
|------------------------------------|----------------------------|----------------------|-------------|
| 87RB74                             | Summer RBOB                | 7.4                  | 11          |
| 87RB115                            | Winter RBOB                | 11.5                 | 11          |
| 87RB125                            | Winter RBOB                | 12.5                 | 11          |
| 87RB135                            | Winter RBOB                | 13.5                 | 11          |
| 87RB145                            | Winter RBOB                | 14.5                 | 11          |
| 87RB150                            | Winter RBOB                | 15.0                 | 11          |
| 87RB155                            | Winter RBOB                | 15.5                 | 11          |

**RBOB - 93 Octane after DFE blending at 10 percent ethanol by volume**

|         |             |      |    |
|---------|-------------|------|----|
| 93RB74  | Summer RBOB | 7.4  | 11 |
| 93RB115 | Winter RBOB | 11.5 | 11 |
| 93RB125 | Winter RBOB | 12.5 | 11 |
| 93RB135 | Winter RBOB | 13.5 | 11 |
| 93RB145 | Winter RBOB | 14.5 | 11 |
| 93RB150 | Winter RBOB | 15.0 | 11 |
| 93RB155 | Winter RBOB | 15.5 | 11 |

## SEGREGATED GASOLINE GRADES

**CBOB - This gasoline is for export from the United States only**

| Product Code <sup>(1)</sup> | Product Designation | Max RVP (psi) | Page |
|-----------------------------|---------------------|---------------|------|
| 87CX90 / 93CX90             | Export Gasoline     | 9.0           | 13   |
| 87CX100 / 93CX100           | Export Gasoline     | 10.0          | 13   |
| 87CX125 / 93CX125           | Export Gasoline     | 12.5          | 13   |
| 87CX145 / 93CX145           | Export Gasoline     | 14.5          | 13   |
| 87CX155 / 93CX155           | Export Gasoline     | 15.5          | 13   |

## FUNGIBLE DISTILLATES GRADES

| Product Code | Product Designation                          | Cetane<br>Minimum | Origin<br>(ppm)<br>Sulfur |  | Page |
|--------------|--|-------------------|---------------------------|--|------|
|              |  |                   | Maximum                   |  |      |
| 15HO2        | Certified NTDF, 15 ppm sulfur Heating Oil #2 | 40                | 11                        |  | 14   |
| 15MV2        | ULSD, Ultra Low Sulfur Diesel Fuel #2        | 40                | 11                        |  | 16   |
| 15MV1        | ULSD, Ultra Low Sulfur Diesel Fuel #1        | 40                | 11                        |  | 18   |
| 15K1         | Certified NTDF, 15 ppm sulfur Kerosene #1    | 40                | 11                        |  | 19   |
| JETA         | High Sulfur Aviation Kerosene                | N/A               | 3000                      |  | 20   |

## SEGREGATED DISTILLATES-GRADES

|          |  |     |      |    |
|----------|--|-----|------|----|
| 15EXP2   | Export Ultra Low Sulfur Diesel Fuel #2 | 40  | 11   | 22 |
| JETA-FTZ | Export High Sulfur Aviation Kerosene   | N/A | 3000 | 23 |

## FUNGIBLE LIQUEFIED PETROLEUM GAS (LPGs) GRADES

| Product Code | Product Name | Page |
|--------------|--------------|------|
| MIXBUT       | Mixed Butane | 24   |

(1) Gasoline product codes identify both into the pipeline Product Designation (short description) and the intended E10 blended finished gasoline octane number (R+M/2) minimum and RVP maximum.

### Tariff Product Requirements

All products must meet tariff and product specification requirements. Carriers' set tariff requirements to meet the physical constraints of the system.

### Fungible Batches

A "fungible batch" is defined as a batch of petroleum product meeting carriers' established specifications, which may be commingled with other quantities of petroleum product meeting the same specifications. Fungible product specifications are established based on industry standards, federal and state requirements, and carriers' ability to handle various products. Fungible products provide shippers with a significant degree of flexibility for scheduling lifting and delivery times.

### Segregated Batches

A "segregated batch" is defined as a batch of petroleum product meeting carriers' established specifications, which may not be commingled with other quantities. A batch may be segregated because it has properties that differ from the fungible specifications.

## SHIPMENT ACCEPTANCE TERMS

The following are general terms and conditions regarding product quality for all applicable products shipped on the ~~Sunoco Pipeline L.P.~~ **SPL Carrier's** pipeline system, both fungible and segregated:

The requirements set forth in this Pipeline Product Code and Specifications publication apply to all deliveries of product for shipments on the pipelines listed on the cover page hereof. For purposes hereof, "Carrier" means the operator of each such pipeline.

- 1.0 A pre-shipment Certificate of Analysis (C of A), or a full C of A, must be received at **SPL Carrier** origin points, at least two hours prior to lifting. A full C of A, reflecting all tests listed in the **SPL Carrier** current specifications, must be received within 48 hours.
  - 1.1 Jet Fuel requires a full laboratory C of A meeting ASTM D1655 prior to lifting. **Connecting carriers** will provide a pre-shipment FAX to include properties listed under section 1.4 below.
  - 1.2 The C of A must be based on a representative sample of the product to be tendered into the **SPL Carrier** system. The C of A cannot be from a similar tank or previous shipment, and not from a generic set of data for a "typical" product.
  - 1.3 The product sampled and tested for the C of A must be homogenous, such that the C of A is representative of all batches originating from the tank C of A.
  - 1.4 At a MINIMUM, pre-shipment FAX to include:

| <b>CBOB / RBOB</b>     | <b>15MV1 / 15MV2</b>     | <b>Jet Fuel (Connecting Carriers)</b> | <b>Liquefied Petroleum Gases</b> |
|------------------------|--------------------------|---------------------------------------|----------------------------------|
| API Gravity @ 60F      | API Gravity @ 60F        | API Gravity @ 60F                     | Specific Gravity                 |
| RVP                    | Flash Point              | Flash Point                           | Volatility                       |
| Sulfur, wt. %          | Sulfur Content           | Sulfur Content                        | Propane Content                  |
| Benzene, vol %         | Distillation             | Aqua-Glo                              | Butane Content                   |
| Distillation           | Cetane Index (Diesel)    | Filter Membrane                       | Oil Stain Residue                |
| Octane (R + M) /2      | Saybolt Color (Kerosene) | Saybolt Color                         |                                  |
| DRA, ppm total polymer | DRA, ppm total polymer   | Visual Appearance in White Bucket     |                                  |
| Color and Appearance   |                          | Water Separation (MSEP)               |                                  |
|                        |                          |                                       |                                  |
|                        |                          |                                       |                                  |
|                        |                          |                                       |                                  |
|                        |                          |                                       |                                  |
|                        |                          |                                       |                                  |
|                        |                          |                                       |                                  |

- 2.0 Acceptance of the C of A by **SPL Carrier** does not relieve the Shipper of liability or responsibility for specification compliance and composition of the product.
- 3.0 **SPL Carrier** reserves the right to reject or terminate shipments when samples are found to deviate from the applicable Certificate of Analysis.
- 4.0 **SPL Carrier** may sample and test products prior to acceptance, and during shipments, into the **SPL Carrier** system, and in the event of a variance against the C of A, **SPL Carrier** results will prevail.
- 5.0 For any parameter reported bordering on the specification maximum/minimum level, a recheck may be required prior to acceptance.
- 6.0 Product exception for an off-specification parameter may be requested in writing to ~~Sunoco Pipeline~~ **Energy Transfer** Quality Assurance. However, such requests will be assessed on a case-by-case basis and their approval is not guaranteed.

- 7.0 Any water suspended in or received with Shipper product will be deducted from shipment volumes. The Shipper will be requested to remove the water or be invoiced for handling and disposal charges at the then prevailing rate as determined by **SPLCarrier**.
- 8.0 Workmanship - Appearance
- 8.1 The product shall be clear and bright, free of any suspended water, sediment, or foreign material. A maximum Haze rating of 2 as determined by ASTM D4176, Procedure 2 @ 77 °F.
- 8.2 The product can contain no constituents that in **SPL'sCarriers** opinion would render it unacceptable for its commonly accepted end use. Such constituents may include but are not limited to unusual color or offensive odor.
- 9.0 PRODUCT TEMPERATURE - The maximum temperature of incoming product shall not exceed 100°F for Gasoline, JET A and #1 Kerosene. The maximum temperature of incoming product shall not exceed 110°F for Diesel Fuel Oil and #2 Heating Oil.
- 10.0 The only non-hydrocarbon components permitted to be blended in gasoline, moved by **SPLCarrier**, are those listed in the specifications. The use of alcohols for blending purposes is prohibited in all gasoline, segregated or fungible.
- 11.0 It is the Shipper's responsibility to ensure the product meets all downstream carrier, federal, state or local requirements not stipulated in the **SPLCarrier** specifications.
- 12.0 All Test Methods listed are based on the most current ASTM, unless specified otherwise or are regulatory required test methods.
- 13.0 BIO-FUELS PROHIBITION POLICY: In the interest of protecting our Shippers' products, all products shipped are not permitted to contain Bio-Fuels, such as ethanol and bio-diesel (FAME, FAEE, or other Esters). Any distillate not produced by the origin fuel manufacturing facility (e.g., import, previously certified diesel), whether blended with fuel manufacturing facility production or delivered directly into the pipeline, shall be tested by ASTM D7371 or EN 14078. FAME result must be below the detection limit of the test method used.

**SEGREGATED PRODUCTS FOR WHICH SPECIFICATIONS HAVE NOT BEEN ISSUED**

| <b>LPG<br/>PRODUCT<br/>CODE</b> | <b>PRODUCT<br/>NAME</b> | <b>CRUDE<br/>OIL<br/>CODE</b> | <b>PRODUCT<br/>NAME</b> | <b>OTHER PRODUCT<br/>CODE</b> | <b>PRODUCT<br/>NAME</b> |
|---------------------------------|-------------------------|-------------------------------|-------------------------|-------------------------------|-------------------------|
| BBUTY                           | BB Stock                | LEF                           | Lube Ext'd Feedstocks   | ALKYLT                        | Alkylate                |
| ISO                             | IsoButane               | SWEET                         | Sweet                   | BTF                           | Bonded Turbine Fuel     |
| LPGMIX                          | LPG Mix                 | SYN                           | Synthetic               | COND                          | Condensate              |
| PENT                            | Pentane                 | SOUR                          | Sour                    | DISTCOM                       | Distillate Component    |
| PROP                            | Propane                 | HEAVY                         | Heavy Sour              | GASCOMP                       | Gasoline Component      |
| ISOP                            | IsoPentane              |                               |                         | LCO                           | Light Cycle Oil         |
| PRPL                            | Propylene               |                               |                         | NAPH                          | Naphtha                 |
|                                 |                         |                               |                         | RAFF                          | Raffinate               |
|                                 |                         |                               |                         | REFLTM                        | Reformate               |
|                                 |                         |                               |                         | TLENE                         | Toluene                 |
|                                 |                         |                               |                         | TXMIX                         | Toluene/Xylene Mix      |
|                                 |                         |                               |                         | TRNSMX                        | Transmix                |
|                                 |                         |                               |                         | STMIX                         | Segregated Transmix     |
|                                 |                         |                               |                         | UNFGAS                        | Unfinished Gasoline     |
|                                 |                         |                               |                         | VGO                           | Vacuum Gas Oil          |
|                                 |                         |                               |                         | XYLE                          | Xylene                  |
|                                 |                         |                               |                         | 93CF78/90/115/135             | Conventional Gasoline   |

**TABLE 1: SEASONAL VAPOR PRESSURE, DISTILLATION AND VAPOR LOCK PROTECTION CLASS REQUIREMENTS**

The following schedule denotes the volatility properties as required by **SPLCarrier** and may not coincide with dates specified by appropriate government agencies. Some **Carrier** systems **within SPL** may require earlier **transition** dates for **summer seasonal** RVP limits in order to ensure compliance with EPA federal **and state** regulations. Shippers will be advised in advance of the date that fungible gasolines must be input into the **SPLCarrier** System via the scheduling calendar. **SPLCarrier** will monitor RVP compliance by ASTM D5191 using the EPA calculation adjustment in 40 CFR §1090.1355: **RVP** (psi) = (0.956 \* P<sub>Total</sub> - 0.347).

**APPROXIMATE ORIGIN MAXIMUM RVP AND DISTILLATION REQUIREMENTS <sup>(1)</sup>**

| Destination                          |       | Jan  | Feb       | Mar 1-14  | Mar 15-31 | Apr 1-15   | Apr 16-30  | May        | Jun        | Jul        | Aug        | Sep 1-15   | Sep 16-30 | Oct  | Nov  | Dec  |
|--------------------------------------|-------|------|-----------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------|------|------|------|
| New York <sup>(3)</sup>              | Class | E-5  | E-5       | D-4       | D-4       | AA-4       | AA-4       | AA-3       | AA-3       | AA-3       | AA-3       | AA-3       | D-4       | D-4  | E-5  | E-5  |
|                                      | psi   | 15.0 | 15.0      | 13.5      | 13.5      | 9.0        | 9.0        | 9.0        | 9.0        | 9.0        | 9.0        | 9.0        | 13.5      | 13.5 | 15.0 | 15.0 |
| Pennsylvania <sup>(3)</sup>          | Class | E-5  | E-5       | D-4       | D-4       | AA-4AA-3   | AA-4AA-3   | AA-3       | AA-3       | AA-3       | AA-3       | AA-3       | D-4       | D-4  | E-5  | E-5  |
|                                      | psi   | 15.5 | 15.5      | 14.5      | 14.5      | 7.4 / 10.0 | 7.4 / 10.0 | 7.4 / 10.0 | 7.4 / 10.0 | 7.4 / 10.0 | 7.4 / 10.0 | 7.4 / 10.0 | 14.5      | 14.5 | 15.5 | 15.5 |
| Ohio                                 | Class | E-5  | E-5D-4    | D-4       | D-4       | A-4A-3     | A-4A-3     | A-3        | A-3        | A-3        | A-3        | A-3        | C-3       | D-4  | E-5  | E-5  |
|                                      | psi   | 15.5 | 15.5/14.5 | 14.5      | 14.5      | 10.0       | 10.0       | 10.0       | 10.0       | 10.0       | 10.0       | 10.0       | 12.5      | 14.5 | 15.5 | 15.5 |
| Michigan                             | Class | E-5  | E-5       | D-4       | D-4       | A-4        | A-4        | A-3        | A-3        | A-3        | A-3        | A-3        | D-4       | D-4  | E-5  | E-5  |
|                                      | psi   | 15.5 | 15.5      | 14.5      | 14.5      | 10.0       | 10.0       | 10.0       | 10.0       | 10.0       | 10.0       | 10.0       | 14.5      | 14.5 | 15.5 | 15.5 |
| Detroit Area                         | Class | E-5  | E-5       | D-4       | D-4       | AA-4       | AA-4       | AA-3       | AA-3       | AA-3       | AA-3       | AA-3       | D-4       | D-4  | E-5  | E-5  |
|                                      | psi   | 15.5 | 15.5      | 14.5      | 14.5      | 8.0        | 8.0        | 8.0        | 8.0        | 8.0        | 8.0        | 8.0        | 14.5      | 14.5 | 15.5 | 15.5 |
| Texas - Hebert System <sup>(4)</sup> | Class | D-4  | D-4C-3    | D-4C-3    | D-4C-3    | AA-3AA-2   | AA-3AA-2   | AA-3AA-2   | AA-3AA-2   | AA-2       | AA-2       | AA-2       | AA-2      | C-3  | D-4  | D-4  |
|                                      | psi   | 14.5 | 14.5/12.5 | 14.5/12.5 | 14.5/12.5 | 7.8        | 7.8        | 7.8        | 7.8        | 7.8        | 7.8        | 7.8        | 7.8       | 12.5 | 14.5 | 14.5 |

| Vapor Pressure / Distillation Class | Max Vapor Pressure          | Distillation Temperatures, °F (°C), at % Volume Evaporated ASTM D86 |          |           |           |               | Residue Vol. % max | Driveability Index max, °F (°C) Derived <sup>(2)</sup> |
|-------------------------------------|-----------------------------|---|----------|-----------|-----------|---------------|--------------------|--|
|                                     |                             | 10 % max  | 50 % min | 50 % max  | 90 % max  | End Point max |                    |  |
| AA                                  | 7.4 / 7.8 / 8.0 / 8.8 / 9.0 | 158 (70)  | 150 (66) | 250 (121) | 374 (190) | 430 (221)     | 2                  | 1250 (597)   |
| A                                   | 10.0                        | 158 (70)  | 150 (66) | 250 (121) | 374 (190) | 430 (221)     | 2                  | 1250 (597)   |
| B                                   | 11.0                        | 149 (65)  | 150 (66) | 245 (118) | 374 (190) | 430 (221)     | 2                  | 1240 (591)   |
| C                                   | 12.5                        | 140 (60)  | 150 (66) | 240 (116) | 365 (185) | 430 (221)     | 2                  | 1230 (586)   |
| D                                   | 13.5 / 14.5                 | 131 (55)  | 150 (66) | 235 (113) | 365 (185) | 430 (221)     | 2                  | 1220 (580)   |
| E                                   | 15.0 / 15.5                 | 122 (50)  | 150 (66) | 230 (110) | 365 (185) | 430 (221)     | 2                  | 1200 (569)   |

| Class: Vapor/Liquid Ratio of 20:1 ASTM D5188 °F (°C) Min. | 1        | 2        | 3        | 4        | 5        |
|---|----------|----------|----------|----------|----------|
| For products which contain 10 % Ethanol                   | 129 (54) | 122 (50) | 116 (47) | 107 (42) | 102 (39) |

- (1) All limits are for gasoline-ethanol blends containing no more than 10 % by volume ethanol; refer to individual Product Grade specifications for specific RVP requirements. T50, TV/L and RVP limits for all RBOBs and CBOBs must comply with the applicable requirements of the area in which the fuel is destined for retail.
- (2) The Driveability Index (DI) specification limits are applicable at the fuel manufacturing facility or import facility as defined by 40 CFR §1090.80.
- (3) Northumberland and Williamsport, PA delivery locations must meet the winter RVP limit requirements for New York; summer RVP limit for these locations is 10.0 psi maximum.
- (4) Texas SIP-controlled summer 7.8 psi low RVP gasoline applies through October 1.

**TABLE 2: ADDITIVE APPROVALS AND PROHIBITIONS**

Sunoco Carrier Pipeline will permit only the types and concentrations of additives detailed below; all other types and concentrations or additives are prohibited.

**GUM INHIBITORS AND METAL DEACTIVATORS**

Gasoline shipments may, but are not required to, contain the following:

|   |  |
|---|--|
| N,N'di-secondary butyl para-phenylenediamine          | N,N'disalicylidene-1, 2 propanediamine |
| N,N'di (1-ethyl-2-methylpentyl) para-phenylenediamine | 2,6-di-tertiary butyl 4 methyl phenol  |
| N,N'di-isopropyl-para-phenylenediamine                | n-Butyl para-aminophenol               |
| N,N-bis-(1,4-dimethylpentyl)-p-phenylenediamine       | 2,4,6 - tri-tertiary butylphenol       |
| Ortho-tertiary butylphenol                            | 2,4-dimethyl-6-tertiary-butylphenol    |
| 2,4-di-tertiary butylphenol                           | 2,6-di-tertiary butylphenol            |
| N, secondary butyl, N'phenyl-para-phenylenediamine    | Mixed propylated and butylated phenols |
| Butylated ethyl, methyl and dimethyl phenols          | 2,4,6 tri-isopropyl phenol             |

**CORROSION INHIBITORS**

All products shipped on SPL Carrier Pipeline, with the exception of all grades of Aviation Kerosene, are required to meet a minimum level of corrosion protection. The concentration of inhibitor dosage will be controlled to meet a minimum rating of B+ (less than 5% of test surface rusted) as determined by NACE Standard TM0172-2015, Test Method – Determining Corrosive Properties of Cargoes in Petroleum Product Pipelines.

Gasoline shipped on Sunoco Carrier Pipeline may contain only the following corrosion inhibitors:

|                |                                  |  |          |  |
|----------------|----------------------------------|--|----------|--|
| Aqua Process   | 11CH77                           |  | Mobil    | C-605  |
| Afton Chem.    | HiTEC 4875, 6455                 |  | Nalco    | 5403, 5405, 5406, EC5624A, EC5626A                       |
| Corexit        | 5267                             |  | SPEC-AID | 8Q22, 8Q110ULS, 8Q112ULS, 8Q123ULS                       |
| Innospec       | DCI-4A, DCI-6A, DCI-11, DCI-30.N |  | Tolad    | 245, 249, 351, 3232, 3232D, 3240, 4410, 9711, 9715, 9719 |
| Ethyl Hi Tec   | 580                              |  | Unichem  | 7500, 7501, 7510   |
| Lubrizol       | 541, 8014, 8017                  |  | UOP      | Unicor, Unicor J, Unicor PL                              |
| MidContinental | MCC5001                          |  | Athlon   | 611, RPS-661   |

In addition to the above additives, the following may be used in diesel fuels and fuel oil transported by SPL Carrier: DuPont AFA-1, Innospec DMA-4, Nalco 5400-A, Nalco EC 5407-A, Infineum R511, Tolad 3032.

**Static Dissipater Additives (Conductivity Improvers)**

Product shipments may, but are not required to, contain static dissipater additives (SDA). The only approved SDA for use on Sunoco Carrier Pipeline is Innospec Statis 450 and AvGuard. SDA is prohibited from all Jet Fuel / Aviation Kerosene grades. The origin maximum concentration of Statis 450 and AvGuard is 0.75 mg/l, and the origin maximum conductivity allowed is 250 pS/m at 21°C (70°F) by ASTM D2624.

**Aviation Kerosene Additives**

Product shall only contain antioxidants and metal deactivators specified and within the concentration noted in the latest ASTM D1655 with advance approval from Sunoco Carrier Pipeline prior to shipment. Use of these additives is expected to be short term at reasonable treat levels and is to be clearly indicated on the Certificate of Analysis. All other additives are prohibited. Sunoco Carrier Pipeline reserves the right to deny shipment of product containing these additives.

**Cloud and Pour Point Depressant Additives**

Product shall only contain ethylene vinyl acetate copolymer-based cloud and pour point depressant additives only upon advance approval from Sunoco Carrier Pipeline prior to shipment. Use of these additives is expected to be short term at reasonable treat levels and is to be clearly indicated on the Certificate of Analysis. Sunoco Carrier Pipeline reserves the right to deny shipment of product containing cloud and pour point depressant additives.

### Renewable Diesel

Renewable diesel is a liquid fuel derived from 100 % hydrotreated biomass-based feedstock’s that meets the registration requirements for fuels and fuel additives established by the EPA under section 211 of the Clean Air Act and the requirements of ASTM D975. Renewable diesel shall not contain fatty acid esters; FAME, FAEE, or other esters.

Renewable Diesel as defined above is NOT considered biodiesel. All biodiesel remains prohibited on the pipeline.

Distillate grades 15HO2 and 15MV2 allow up to five (5) % by volume Renewable Diesel.

~~Sunoco~~Carrier Pipeline assumes no responsibility as a blender and all RINs (Renewable Identification Numbers) shall be separated before entering ~~Sunoco~~Carrier Pipeline’s system. At origin locations the volume of Renewable Diesel shall be disclosed on the COA (Certificate of Analysis).

### Cetane Improver Additives

Product shall only contain 2-ethyl hexyl nitrate or T-butyl peroxide based cetane improver additives only upon advance approval from ~~Sunoco~~Carrier Pipeline prior to shipment. Use of these additives is expected to be short term at reasonable treat levels and is to be clearly indicated on the Certificate of Analysis. ~~Sunoco~~Carrier Pipeline reserves the right to deny shipment of product containing cetane improver additives.

### Prohibited Additives

~~Sunoco~~Carrier Pipeline only permits certain types and concentrations of additives as referenced, while all other types and concentrations of additives are prohibited. Prohibited additives include, but are not limited to the following:

|                                  |                                    |                           |
|----------------------------------|------------------------------------|---------------------------|
| Lubricity additives              | Port Fuel Injector (PFI) additives | Biodiesel                 |
| Intake Valve Detergent Additives | Additives containing Phosphorous   | Marker Solvent Yellow 124 |

### Additive Documentation Requirements

If present, the type and concentration of approved additives must be clearly indicated on the Certificate of Analysis. Additive treat rates are acceptable for concentration reporting. Carrier may request review of volume reconciliation data to verify actual treat rates.



## CB GRADES - FUNGIBLE SPECIFICATION FOR CONVENTIONAL GASOLINE BLENDSTOCK FOR OXYGENATE BLENDING WITH 10 % ETHANOL <sup>(1)</sup>

All parameters must be met after blending with denatured fuel ethanol unless noted.

| <u>CB - GRADE RVPs</u> | <u>DESIGNATION</u>          | <u>ASTM TEST METHOD</u> | <u>E0</u>                          | <u>E10</u>                               |
|------------------------|-----------------------------|-------------------------|------------------------------------|--|
|                        |                             |                         | <u>NEAT CBOB RVP MAXIMUM (PSI)</u> | <u>10 % ETHANOL CG RVP MAXIMUM (PSI)</u> |
| 87CB78 / 93CB78        | Summer CBOB <sup>(15)</sup> | D5191                   | 6.6                                | 7.8 <sup>(16)</sup>                      |
| 87CB80 / 93CB80        | Summer CBOB <sup>(15)</sup> | D5191                   | 7.0 <sup>(16)</sup>                | 8.0                                      |
| 87CB90 / 93CB90        | Summer CBOB <sup>(15)</sup> | D5191                   | 7.8 <sup>(16)</sup>                | 9.0 <sup>(14,16)</sup>                   |
| 87CB100 / 93CB100      | Summer CBOB                 | D5191                   | 9.0 <sup>(16)</sup>                | 10.0                                     |
| 87CB125 / 93CB125      | Winter CBOB                 | D5191                   | 11.5                               | 12.5                                     |
| 87CB135 / 93CB135      | Winter CBOB                 | D5191                   | 12.9                               | 13.5 <sup>(7)</sup>                      |
| 87CB145 / 93CB145      | Winter CBOB                 | D5191                   | 13.5                               | 14.5                                     |
| 87CB150 / 93CB150      | Winter CBOB                 | D5191                   | 14.5                               | 15.0 <sup>(7)</sup>                      |
| 87CB155 / 93CB155      | Winter CBOB                 | D5191                   | 15.0                               | 15.5                                     |

| <u>87CB GRADE OCTANES</u> | <u>ASTM TEST METHOD</u> | <u>OCTANE MINIMUM</u> | <u>OCTANE MINIMUM</u> |
|---------------------------|-------------------------|-----------------------|-----------------------|
| RON                       | D2699, D2885            | –                     | Report                |
| MON                       | D2700, D2885            | –                     | 82.0                  |
| Index, (R+M)/2            | Calculated              | –                     | 87.0                  |

| <u>93CB GRADE OCTANES</u> <sup>(13)</sup> | <u>ASTM TEST METHOD</u> | <u>OCTANE MINIMUM</u> | <u>OCTANE MINIMUM</u> |
|---|-------------------------|-----------------------|-----------------------|
| RON                                       | D2699, D2885            | Report                | Report                |
| MON                                       | D2700, D2885            | Report                | Report                |
| Index, (R+M)/2                            | Calculated              | 90.0                  | 93.0                  |

| <u>PRODUCT PROPERTY</u>           | <u>ASTM TEST METHOD</u> | <u>ORIGIN SPECIFICATIONS</u> <sup>(2)</sup> |                  | <u>Note</u> |
|-----------------------------------|-------------------------|---|------------------|-------------|
|                                   |                         | <u>MINIMUM</u>                              | <u>MAXIMUM</u>   |             |
| Gravity, °API at 60 °F            | D287, D1298, D4052      | Report                                      |                  | 12          |
| RVP (psi)                         | D5191                   | See above and Table 1 on page 6             |                  | 7,8,10      |
| Octane RON                        | D2699, D2885            |   |                  |             |
| MON                               | D2700, D2885            |   |                  |             |
| (R+M)/2                           |                         | See table above                             |                  |             |
| Oxygen Content, wt. %             | D5599                   |   | 0.1              | 4,11,12     |
| Benzene, volume %                 | D3606, D5769            |   | (Footnote 9)     | 11          |
| Color                             |                         |   | Undyed           |             |
| Copper Corrosion 3 hours @ 122 °F | D130                    |   | 1                | 2           |
| Silver Corrosion 3 hours @ 122 °F | D7667, D7671            |   | 1                | 2           |
| Doctor test OR                    | D4952                   | Negative                                    |                  |             |
| Mercaptan sulfur, wt. %           | D3227                   |   | 0.002            | 5           |
| Solvent Washed Gum, mg/100ml      | D381                    |   | 4                |             |
| Lead Content – g/gal at origin    | D3237, D5059            |   | 0.01             | 11          |
| Oxidation stability, minutes      | D525                    | 240   |                  | 12          |
| Phosphorous, g/gal                | D3231                   |   | 0.004            | 11          |
| Sulfur, ppmw                      | D2622                   |   | 80.              | 8,11        |
| Haze Rating, @ 77 °F              | D4176 Procedure 2       |   | 2                | 12          |
| Corrosive Properties              | NACE TM0172-2015        | B+  |                  | 12          |
| Odor                              |                         | Non-offensive                               |                  | 6           |
| Distillation                      | D86                     |   | Refer to Table 1 | 11, 13      |
| Vapor/Liquid Ratio of 20:1        | D5188                   |   | Refer to Table 1 | 3, 13       |
| Driveability Index                | D4814                   |   | Refer to Table 1 |             |

## CB GRADES - FUNGIBLE SPECIFICATION FOR CONVENTIONAL GASOLINE BLENDSTOCK FOR OXYGENATE BLENDING WITH 10 % ETHANOL <sup>(1)</sup> Cont'd

Gasoline designed for gasoline-ethanol blends in accordance with 40 CFR §1090.215.

CBOB for oxygenate blending with denatured fuel ethanol (DFE), transferred to an EPA registered oxygenate blender, blended at 10 percent ethanol by volume.

Must not contain any heavy metals, including but not limited to lead or manganese.

- (1) Base Gasoline - Not for sale to the ultimate consumer. Non-additized detergent gasoline. **This product may not be used in any reformulated gasoline covered area during the summer season control period.**
- (2) *Refer to Table 2 for Additive Approvals and Prohibitions.*
  - a. Corrosion inhibitors, gum inhibitors and metal deactivators.
  - b. No additives or corrosion inhibitors containing phosphorous may be used in this gasoline.
  - c. The use of Port Fuel Injector (PFI) and intake valve detergent additives is prohibited.
  - d. The use of MMT octane enhancing additive is prohibited.
- (3) Computer and Linear methods may be used to determine V/L value. The V/L referee method will be D5188.
- (4) **Before blending with denatured fuel ethanol**, this grade may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in this grade is prohibited. **After blending with denatured fuel ethanol**, gasoline must contain 10 volume percent ethanol.
- (5) Mercaptan sulfur waived if fuel is negative by Doctor Test.
- (6) Any gasoline exhibiting an offensive odor, exhibiting the odor of dienes, and/or any gasoline that poses a personal health hazard will not be accepted for shipment. Any gasoline containing more than 0.50 % by wt. of dicyclopentadiene will not be accepted for shipment. The referee method will be based on a gas chromatograph test.
- (7) Northumberland and Williamsport, PA delivery locations must meet the winter RVP limit requirements for New York; summer RVP limit for these locations is 10.0 psi maximum. For all other BOB areas, refer to Table 1 on Page 6.
- (8) Requires dual certification on the certificate of analysis, before and after blending with denatured fuel ethanol.
- (9) Before blending with DFE the benzene maximum is 3.8 % by volume, "OR" after blending with DFE the benzene maximum is 3.4 % by volume.
- (10) For products blended to meet EPA or state-imposed summer RVP requirements, tests must be performed in accordance with the procedures described in 40 CFR §1090.1355 and footnote (11) below.
- (11) Refer to test methods requirements published in 40 CFR Part 1090 Subpart N.
- (12) Specification must be met before blending of denatured fuel ethanol.
- (13) **Premium CB grades** specification limits **before blending with denatured fuel ethanol** will be as follows: R+M/2 minimum = 90.0; T50 minimum = 170 °F; TV/L minimum: Class 3 = 124 °F, Class 4 = 116 °F, Class 5 = 105 °F; these requirements are not applicable for the Hebert System.
- (14) Hebert System: 87CB90 / 93CB90 RVP limit after blending with ethanol = 8.8 psi max; report neat RVP's.
- (15) SIP-Controlled.
- (16) This product does not meet the requirements for summer reformulated gasoline.

## RB GRADES - FUNGIBLE SPECIFICATION FOR REFORMULATED GASOLINE BLENDSTOCK FOR OXYGENATE BLENDING WITH 10 % ETHANOL <sup>(1)</sup>

All parameters must be met after blending with denatured fuel ethanol unless noted.

| <u>RB - GRADE RVPs</u> | <u>DESIGNATION</u> | <u>ASTM TEST METHOD</u> | <u>E0</u>                          | <u>E10</u>                                |
|------------------------|--------------------|-------------------------|------------------------------------|---|
|                        |                    |                         | <u>NEAT RBOB RVP MAXIMUM (PSI)</u> | <u>10 % ETHANOL RFG RVP MAXIMUM (PSI)</u> |
| 87RB74 / 93RB74        | Summer RBOB        | D5191                   | Report                             | 7.4                                       |
| 87RB115 / 93RB115      | Winter RBOB        | D5191                   | 10.5                               | 11.5                                      |
| 87RB125 / 93RB125      | Winter RBOB        | D5191                   | 11.5                               | 12.5                                      |
| 87RB135 / 93RB135      | Winter RBOB        | D5191                   | 12.9                               | 13.5                                      |
| 87RB145 / 93RB145      | Winter RBOB        | D5191                   | 13.5                               | 14.5                                      |
| 87RB150 / 93RB150      | Winter RBOB        | D5191                   | 14.5                               | 15.0                                      |
| 87RB155 / 93RB155      | Winter RBOB        | D5191                   | 15.0                               | 15.5                                      |

| <u>87RB GRADE OCTANES</u> | <u>ASTM TEST METHOD</u> | <u>OCTANE MINIMUM</u> | <u>OCTANE MINIMUM</u> |
|---------------------------|-------------------------|-----------------------|-----------------------|
| RON                       | D2699, D2885            | -                     | Report                |
| MON                       | D2700, D2885            | -                     | 82.0                  |
| Index, (R+M)/2            | Calculated              | -                     | 87.0                  |
| <u>93RB GRADE OCTANES</u> | <u>ASTM TEST METHOD</u> | <u>OCTANE MINIMUM</u> | <u>OCTANE MINIMUM</u> |
| RON                       | D2699, D2885            | -                     | Report                |
| MON                       | D2700, D2885            | -                     | Report                |
| Index, (R+M)/2            | Calculated              | -                     | 93.0                  |

| <u>PRODUCT PROPERTY</u>           | <u>ASTM TEST METHOD</u> | <u>ORIGIN SPECIFICATIONS <sup>(2)</sup></u> |                  | <u>Note</u> |
|-----------------------------------|-------------------------|---|------------------|-------------|
|                                   |                         | <u>MINIMUM</u>                              | <u>MAXIMUM</u>   |             |
| Gravity, °API at 60 °F            | D287, D1298, D4052      | Report                                      |                  | 12          |
| RVP (psi)                         | D5191                   | See above and Table 1 on page 6             |                  | 8,10        |
| Octane RON                        | D2699, D2885            |   |                  |             |
| MON                               | D2700, D2885            |   |                  |             |
| Index, (R+M)/2                    |                         | See table above                             |                  |             |
| Oxygen Content, wt. %             | D5599                   |   | 0.1              | 4,11,12     |
| Benzene, volume %                 | D3606, D5769            |   | (Footnote 9)     | 11          |
| Color                             |                         |   | Undyed           |             |
| Copper Corrosion 3 hours @ 122 °F | D130                    |   | 1                | 2           |
| Silver Corrosion 3 hours @ 122 °F | D7667, D7671            |   | 1                | 2           |
| Doctor test OR                    | D4952                   | Negative                                    |                  |             |
| Mercaptan sulfur, wt. %           | D3227                   |   | 0.002            | 5           |
| Solvent Washed Gum, mg/100ml      | D381                    |   | 4                |             |
| Lead Content – g/gal at origin    | D3237, D5059            |   | 0.01             | 11          |
| Oxidation stability – minutes     | D525                    | 240   |                  | 12          |
| Phosphorous, g/gal                | D3231                   |   | 0.004            | 11          |
| Sulfur, ppmw                      | D2622                   |   | 80               | 8,11        |
| Haze Rating, @ 77 °F              | D4176 Procedure 2       |   | 2                | 12          |
| Corrosive Properties              | NACE TM0172-2015        | B+  |                  | 12          |
| Odor                              |                         | Non-offensive                               |                  | 6           |
| Distillation                      | D86                     |   | Refer to Table 1 | 11          |
| Vapor/Liquid Ratio of 20:1        | D5188                   |   | Refer to Table 1 | 3           |
| Driveability Index                | D4814                   |   | Refer to Table 1 |             |

## RB GRADES - FUNGIBLE SPECIFICATION FOR REFORMULATED GASOLINE BLENDSTOCK FOR OXYGENATE BLENDING WITH 10 % ETHANOL <sup>(1)</sup> Cont'd

Gasoline designed for gasoline-ethanol blends in accordance with 40 CFR §1090.215.

RBOB for oxygenate blending with denatured fuel ethanol (DFE), transferred to an EPA registered oxygenate blender, blended at 10 percent ethanol by volume.

Must not contain any heavy metals, including but not limited to lead or manganese.

- (1) Base Gasoline - Not for sale to the ultimate consumer. Non-additized detergent gasoline. **Summer RBOB: This product meets the requirements for summer reformulated or conventional gasoline.**
- (2) *Refer to Table 2 for Additive Approvals and Prohibitions.*
  - a. Corrosion inhibitors, gum inhibitors and metal deactivators.
  - b. No additives or corrosion inhibitors containing phosphorous may be used in this gasoline.
  - c. The use of Port Fuel Injector (PFI) and intake valve detergent additives is prohibited.
  - d. The use of MMT octane enhancing additive is prohibited.
- (3) Computer and Linear methods may be used to determine V/L value. The V/L referee method will be D5188.
- (4) **Before blending with denatured fuel ethanol**, this grade may not contain oxygenates, such as ethers and alcohols. The use of non-hydrocarbon blending components in this grade is prohibited. **After blending with denatured fuel ethanol**, gasoline must contain 10 volume percent ethanol.
- (5) Mercaptan sulfur waived if fuel is negative by Doctor Test.
- (6) Any gasoline exhibiting an offensive odor, exhibiting the odor of dienes, and/or any gasoline that poses a personal health hazard will not be accepted for shipment. Any gasoline containing more than 0.50 % by wt. of dicyclopentadiene will not be accepted for shipment. The referee method will be based on a gas chromatograph test.
- (7) [Reserved]
- (8) Requires dual certification on the certificate of analysis, before and after blending with denatured fuel ethanol.
- (9) Before blending with DFE the benzene maximum is 3.8 % by volume, "OR" after blending with DFE the benzene maximum is 3.4 % by volume.
- (10) For products blended to meet EPA or state-imposed summer RVP requirements, tests must be performed in accordance with the procedures described in 40 CFR §1090.1355 and footnote (11) below.
- (11) Refer to test method requirements published in 40 CFR Part 1090 Subpart N.
- (12) Specification must be met before blending of denatured fuel ethanol.

## **87CX & 93CX GRADES - SPECIFICATION FOR SEGREGATED EXPORT GASOLINE <sup>(1)</sup>**

***87CX & 93CX SPECIFICATIONS ARE IDENTICAL TO CB GRADES - FUNGIBLE  
SPECIFICATION FOR CONVENTIONAL GASOLINE BLENDSTOCK FOR OXYGENATE  
BLENDING WITH 10 % ETHANOL (pg. 9), WITH THE EXCEPTION OF NOTE # 1, AS  
FOLLOWS:***

***Note (1) “This gasoline is for export from the United States only”.***

**15HO2 - SPECIFICATION FOR FUNGIBLE CERTIFIED NON-TRANSPORTATION 15 PPM DISTILLATE FUEL HEATING OIL CONTAINING UP TO 5 % RENEWABLE HYDROTREATED DIESEL FUEL <sup>(1)</sup>**

| <u>PRODUCT PROPERTY</u>                 | <u>ASTM TEST METHOD</u>          | <u>ORIGIN SPECIFICATIONS</u> |                | <u>NOTE</u> |
|---|----------------------------------|------------------------------|----------------|-------------|
|   |                                  | <u>MINIMUM</u>               | <u>MAXIMUM</u> |             |
| Renewable Fuel, vol %                   |                                  | 0                            | 5.0            | 9           |
| Gravity, °API @ 60 °F                   | D287, D1298, D4052               | 30                           |                |             |
| Flash Point, °F                         | D93                              | 130                          |                | 6           |
|   | At Delivery                      | 125                          |                |             |
| Distillation, °F                        | 50 % recovered D86               | Report                       |                | 3           |
|   | 90 % recovered                   | 540                          | 640            |             |
|   | End Point                        |                              | 700            |             |
| Color, ASTM                             | D1500, D6045                     |                              | 2.5            |             |
| Additives                               |                                  | Report                       |                | 5           |
| Viscosity, cSt @ 40 °C (104 °F)         | D445, D7042                      | 1.9                          | 4.1            |             |
| Pour Point, °F                          | D97, D5985, D5949, D5950         |                              | See Note       | 4           |
| Cloud Point, °F                         | D2500, D5771, D5772, D5773       |                              | See Note       | 4           |
| Corrosion, 3 hrs @ 122 °F               | D130                             |                              | 1              |             |
| Sulfur, ppm wt.                         | D2622, D5453, D7039              |                              |                | 7           |
|   | Origin                           |                              | 11             |             |
|   | Connecting carrier               |                              | 11             |             |
| Cetane Number or Index                  | D613, D6890, D4737A, D7170       | 40.                          |                | 8           |
| Aromatics, volume %                     | D1319, D5186                     |                              | 35             | 7           |
|   | OR                               |                              |                |             |
| Cetane Index                            | D976, D4737                      | 40                           |                | 7           |
| Ash, wt. %                              | D482                             |                              | 0.01           |             |
| Carbon Residue: Ramsbottom, wt. %       | D524                             |                              | 0.35           |             |
|   | On 10% Bottom                    |                              |                |             |
| Water and Sediment, vol. %              | D2709                            |                              | < 0.05         |             |
| Thermal stability, 90 minutes           |                                  |                              |                |             |
|   | 150 °C Pad Rating DuPont         |                              | 7              |             |
|   | OR                               |                              |                |             |
| Thermal stability, % Reflectance        | D6468                            |                              |                |             |
|   | Y/Green or                       | 73                           |                |             |
|   | W Unit                           | 65                           |                |             |
|   | OR                               |                              |                |             |
| Oxidation Stability, mg/100 ml          | D2274                            |                              | 2.5            |             |
| Haze Rating, @ 77 °F                    | D4176 Procedure 2                |                              | 2              |             |
| Dye Content, ppm (lb per 1000 Bbls PTB) | D6258, D6756, or Petrospec DT100 |                              | Report         |             |
| Color, visual                           |                                  | Undyed                       |                | 2           |
| Corrosive Properties                    | NACE TM0172-2015                 | B+                           |                |             |

**15HO2 - SPECIFICATION FOR FUNGIBLE CERTIFIED NON-TRANSPORTATION 15 PPM DISTILLATE FUEL HEATING OIL CONTAINING UP TO 5 % RENEWABLE HYDROTREATED DIESEL FUEL <sup>(1)</sup> Cont'd**

(1) **15 ppm sulfur (maximum) certified NTDF - This fuel is designated for non-transportation use; 15 ppm Heating Oil.**

(2) Product must exhibit no visible evidence of dye.

(3) Referee method is ASTM D86. Test Method D2887 may be used as an alternative if correlated to D86 and reported as "Predicted D86".

|                                 |                   |                  |
|---------------------------------|-------------------|------------------|
| (4) Cloud Point and Pour Point: | <u>Sept – Mar</u> | <u>Apr – Aug</u> |
| Cloud                           | +15 °F / -9 °C    | +20 °F / -7 °C   |
| Pour                            | 0 °F / -18 °C     | +10 °F / -12 °C  |

|                                |                  |                   |
|--------------------------------|------------------|-------------------|
| <u>Texas – Hebert Systems:</u> | <u>Oct – Feb</u> | <u>Mar – Sept</u> |
| Cloud :                        | +15°F / -9°C     | +20°F / -7°C      |
| Pour :                         | 0°F / -18°C      | +10°F / - 12°C    |

(5) Report types and concentrations. *Refer to Table 2 for Additive Approvals and Prohibitions.*

(6) Referee method is ASTM D93, test method ASTM D56 may be used as an alternative.

(7) Refer to test method requirements published in 40 CFR Part 1090 Subpart N.

(8) Where Cetane number by test method D613 is not available, cetane index test methods can be used as an approximation.

(9) May contain up to 5.0 % Renewable Diesel as defined in Table 2.

(10) **Hebert & J.C. Nolan Systems - This product does not comply with Title 30 Texas Administrative Code, §114.312 or §114.318 requirements for low emission diesel. TxLED-B: "This product may not be used as fuel for diesel engines in any Texas county requiring the use of low emission diesel fuel without further processing."**

**15MV2 - SPECIFICATION FOR FUNGIBLE 15 PPM #2 MOTOR VEHICLE ULTRA LOW SULFUR DIESEL FUEL CONTAINING UP TO 5 % RENEWABLE HYDROTREATED DIESEL FUEL <sup>(1)</sup>**

| <u>PRODUCT PROPERTY</u>          | <u>ASTM TEST METHOD</u>    | <u>ORIGIN SPECIFICATIONS</u> |                | <u>NOTE</u> |
|----------------------------------|----------------------------|------------------------------|----------------|-------------|
|                                  |                            | <u>MINIMUM</u>               | <u>MAXIMUM</u> |             |
| Renewable Fuel, vol. %           |                            | 0                            | 5.0            | 9           |
| Gravity, °API @ 60 °F            | D287, D1298, D4052         | 30                           |                |             |
| Flash Point, °F                  | D93                        | 130                          |                | 6           |
|                                  | At Delivery                | 125                          |                |             |
| Distillation, °F                 | 50 % recovered             | Report                       |                | 3           |
|                                  | 90 % recovered             | 540                          | 640            |             |
|                                  | End Point                  |                              | 700            |             |
| Color, ASTM                      | D1500, D6045               |                              | 2.5            |             |
| Additives                        |                            | Report                       |                | 5           |
| Viscosity, cSt @ 40 °C (104 °F)  | D445, D7042                | 1.9                          | 4.1            |             |
| Pour Point, °F                   | D97, D5985, D5949, D5950   |                              | See Note       | 4           |
| Cloud Point, °F                  | D2500, D5771, D5772, D5773 |                              | See Note       | 4           |
| Corrosion, 3 hrs. @ 122 °F       | D130                       |                              | 1              |             |
| Sulfur, ppm wt.                  | D2622, D5453, D7039        |                              |                | 7           |
|                                  | Origin                     |                              | 11             |             |
|                                  | Connecting carrier         |                              | 11             |             |
| Cetane Number or Index           | D613, D6890, D4737A, D7170 | 40.                          |                | 8           |
| Aromatics, volume %              | D1319, D5186               |                              | 35             | 7           |
|                                  | OR                         |                              |                |             |
| Cetane Index                     | D976, D4737                | 40                           |                | 7           |
| Ash, wt. %                       | D482                       |                              | 0.01           |             |
| Carbon Residue: Ramsbottom wt. % | D524                       |                              | 0.35           |             |
|                                  | On 10 % Bottom             |                              |                |             |
| Water and Sediment, vol. %       | D2709                      |                              | < 0.05         |             |
| Thermal stability, 90 minutes    |                            |                              |                |             |
|                                  | 150 °C Pad Rating          | DuPont                       | 7              |             |
|                                  | OR                         |                              |                |             |
| Thermal stability, % Reflectance | D6468                      |                              |                |             |
|                                  | Y/Green or                 | 73                           |                |             |
|                                  | W Unit                     | 65                           |                |             |
|                                  | OR                         |                              |                |             |
| Oxidation Stability, mg/100 ml   | D2274                      |                              | 2.5            |             |
| Haze Rating, @ 77 °F             | D4176 Procedure 2          |                              | 2              |             |
| Color, visual                    |                            | Undyed                       |                | 2           |
| Corrosive Properties             | NACE TM0172-2015           | B+                           |                |             |



**15MV2 - SPECIFICATION FOR FUNGIBLE 15 PPM #2 MOTOR VEHICLE ULTRA LOW SULFUR DIESEL FUEL CONTAINING UP TO 5 % RENEWABLE HYDROTREATED DIESEL FUEL <sup>(1)</sup> Cont'd**

- (1) **ULSD, #2D 15 ppm maximum sulfur product is suitable for use as #2 Heating Oil.**
- (2) Product must exhibit no visible evidence of dye.
- (3) Referee method is ASTM D86. Test Method D2887 may be used as an alternative if correlated to D86 and reported as "Predicted D86".
- (4) Cloud Point and Pour Point:
 

|        |                   |                  |
|--------|-------------------|------------------|
|        | <u>Sept – Mar</u> | <u>Apr – Aug</u> |
| Cloud: | +15°F / -9°C      | +20°F / -7°C     |
| Pour : | 0°F / -18°C       | +10°F / - 12°C   |

  

|                                |                  |                   |
|--------------------------------|------------------|-------------------|
| <u>Texas – Hebert Systems:</u> | <u>Oct – Feb</u> | <u>Mar – Sept</u> |
| Cloud :                        | +15°F / -9°C     | +20°F / -7°C      |
| Pour :                         | 0°F / -18°C      | +10°F / - 12°C    |
- (5) Report types and concentrations. *Refer to Table 2 for Additive Approvals and Prohibitions.*
- (6) Referee method is ASTM D93, test method ASTM D56 may be used as an alternative.
- (7) Refer to test method requirements published in 40 CFR Part 1090 Subpart N.
- (8) Where Cetane number by test method D613 is not available, cetane index test methods can be used as an approximation.
- (9) May contain up to 5.0 % Renewable Diesel as defined in Table 2.
- (10) **Hebert & J.C. Nolan Systems** - This product does not comply with Title 30 Texas Administrative Code, §114.312 or §114.318 requirements for low emission diesel. TxLED-B: "This product may not be used as fuel for diesel engines in any Texas county requiring the use of low emission diesel fuel without further processing."

## 15MV1 - SPECIFICATION FOR FUNGIBLE 15 PPM #1 MOTOR VEHICLE ULTRA LOW SULFUR DIESEL FUEL <sup>(1)</sup>

| <u>PRODUCT PROPERTY</u>            | <u>ASTM TEST METHOD</u>    | <u>ORIGIN SPECIFICATIONS</u> |                | <u>NOTE</u> |
|------------------------------------|----------------------------|------------------------------|----------------|-------------|
|                                    |                            | <u>MINIMUM</u>               | <u>MAXIMUM</u> |             |
| Appearance: Clear & Bright @ 77 °F | D4176, Procedure 1         | Pass                         |                | 3           |
| Gravity, °API                      | D287, D1298 or D4052       | 37                           | 51             |             |
| Color, Saybolt At Delivery         | D156, D6045                | 18                           |                |             |
| Copper Corrosion, 2 hrs. @ 212 °F  | D130                       |                              | 1              |             |
| Distillation, °F                   | D86                        |                              |                | 8           |
| 10 % recovered                     |                            |                              | 400            |             |
| 50 % recovered                     |                            | Report                       |                |             |
| 90 % recovered                     |                            |                              | 550            |             |
| 95 % recovered                     |                            | Report                       |                |             |
| End Point                          |                            |                              | 572            |             |
| Residue, volume %                  |                            |                              | 1.5            |             |
| Loss, volume %                     |                            |                              | 1.5            |             |
| Viscosity, cSt 104 °F (40 °C)      | D445, D7042                | 1.3                          | 1.9            |             |
| Flash Point, °F                    | D56, D3828                 | 123                          |                |             |
| Freeze point, °F                   | D2386, D5972, D7153, D7154 |                              | -22            |             |
| Corrosive Properties               | NACE TM0172-2015           | B+                           |                |             |
| Water & Sediment, percent volume   | D2709                      |                              | <0.05          |             |
| Carbon residue, wt % on 10% bottom | D524                       |                              | 0.15           |             |
| Ash, wt. %                         | D482                       |                              | 0.01           |             |
| Sulfur, ppm wt., at Origin         | D2622, D5453, D7039        |                              | 11             | 6           |
| Connecting Carrier                 |                            |                              | 11             |             |
| Doctor Test, OR                    | D4952                      |                              | Negative       |             |
| Mercaptan Sulfur, wt. %            | D3227                      |                              | 0.003          | 2           |
| Cetane Number or Index             | D613, D6890, D4737A        | 40.                          |                | 4           |
| Aromatics, percent volume          | D1319, D5186               |                              | 35             | 6           |
| OR                                 |                            |                              |                |             |
| Cetane Index                       | D976, D4737                | 40                           |                | 6           |
| Conductivity, pS/m                 | D2624                      | Report                       |                | 7           |
| Thermal Stability,                 |                            |                              |                |             |
| 90 minutes at 150 °C Pad Rating    | DuPont                     |                              | 7              | 5           |
| Burning Quality                    | D187                       | Report                       |                |             |

- (1) ULSD, #1D 15 ppm maximum sulfur product is suitable for use as #1 Kerosene.
- (2) The Mercaptan sulfur determination may be waived if the fuel is considered sweet by the doctor test described in ASTM D4952.
- (3) The finished product shall be visibly free of undissolved water, sediment, and suspended matter, and not exhibit any various shades of green, blue or red. Compliance will be determined with the product temperature adjusted to 77°F.
- (4) Where Cetane number by test method D613 is not available, cetane index test methods can be used as an approximation.
- (5) To rate the filter pad use Octel F-21 procedure.
- (6) Refer to test method requirements published in 40 CFR Part 1090 Subpart N.
- (7) Refer to Table 2 for Additive Approvals and Prohibitions.
- (8) Referee method is ASTM D86. Test Method D2887 may be used as an alternative if correlated to D86 and reported as "Predicted D86".

## 15K1 - SPECIFICATION FOR FUNGIBLE CERTIFIED NON-TRANSPORTATION 15 PPM DISTILLATE FUEL #1 KEROSENE <sup>(1)</sup>

| <u>PRODUCT PROPERTY</u>            | <u>ASTM TEST METHOD</u>    | <u>ORIGIN SPECIFICATIONS</u> |                | <u>NOTE</u> |
|------------------------------------|----------------------------|------------------------------|----------------|-------------|
|                                    |                            | <u>MINIMUM</u>               | <u>MAXIMUM</u> |             |
| Appearance: Clear & Bright @ 77 °F | D4176, Procedure 1         | Pass                         |                | 3           |
| Gravity, °API                      | D287, D1298 or D4052       | 37                           | 51             |             |
| Color, Saybolt At Delivery         | D156, D6045                | 18                           |                |             |
| Copper Corrosion, 2 hrs. @ 212 °F  | D130                       |                              | 1              |             |
| Distillation, °F                   | D86                        |                              |                | 8           |
| 10 % recovered                     |                            |                              | 400            |             |
| 50 % recovered                     |                            | Report                       |                |             |
| 90 % recovered                     |                            |                              | 550            |             |
| 95 % recovered                     |                            | Report                       |                |             |
| End Point                          |                            |                              | 572            |             |
| Residue, volume %                  |                            |                              | 1.5            |             |
| Loss, volume %                     |                            |                              | 1.5            |             |
| Viscosity, cSt 104 °F (40 °C)      | D445, D7042                | 1.3                          | 1.9            |             |
| Flash Point, °F                    | D56, D3828                 | 123                          |                |             |
| Freeze point, °F                   | D2386, D5972, D7153, D7154 |                              | -22            |             |
| Corrosive Properties               | NACE TM0172-2015           | B+                           |                |             |
| Water & Sediment, percent volume   | D2709                      |                              | <0.05          |             |
| Carbon residue, wt % on 10% bottom | D524                       |                              | 0.15           |             |
| Ash, wt. %                         | D482                       |                              | 0.01           |             |
| Sulfur, ppm wt., at Origin         | D2622, D5453, D7039        |                              | 11             | 6           |
| Connecting Carrier                 |                            |                              | 11             |             |
| Doctor Test, OR                    | D4952                      |                              | Negative       |             |
| Mercaptan Sulfur, wt. %            | D3227                      |                              | 0.003          | 2           |
| Cetane Number or Index             | D613, D6890, D4737A        | 40.                          |                | 4           |
| Aromatics, percent volume          | D1319, D5186               |                              | 35             | 6           |
| OR                                 |                            |                              |                |             |
| Cetane Index                       | D976, D4737                | 40                           |                | 6           |
| Conductivity, pS/m                 | D2624                      | Report                       |                | 7           |
| Thermal Stability,                 |                            |                              |                |             |
| 90 minutes at 150 °C Pad Rating    | DuPont                     |                              | 7              | 5           |
| Burning Quality                    | D187                       | Report                       |                |             |

- (1) **15 ppm sulfur (maximum) certified NTFD - This fuel is designated for non-transportation use; 15 ppm Kerosene.**
- (2) The Mercaptan sulfur determination may be waived if the fuel is considered sweet by the doctor test described in ASTM D4952.
- (3) The finished product shall be visibly free of undissolved water, sediment, and suspended matter, and not exhibit any various shades of green, blue or red. Compliance will be determined with the product temperature adjusted to 77 °F.
- (4) Where Cetane number by test method D613 is not available, cetane index test methods can be used as an approximation.
- (5) To rate the filter pad use Octel F-21 procedure.
- (6) Refer to test method requirements published in 40 CFR Part 1090 Subpart N.
- (7) Refer to Table 2 for Additive Approvals and Prohibitions.
- (8) Referee method is ASTM D86. Test Method D2887 may be used as an alternative if correlated to D86 and reported as “Predicted D86”.

## JET A - SPECIFICATION FOR FUNGIBLE HIGH SULFUR AVIATION KEROSENE

| <u>PRODUCT PROPERTY</u>   | <u>ASTM<br/>TEST METHOD</u>   | <u>ORIGIN SPECIFICATIONS</u> |  | <u>NOTE</u> |
|---|-------------------------------|------------------------------|--|-------------|
|   |                               | <u>MINIMUM</u>               | <u>MAXIMUM</u>                             |             |
| Acidity, total mg KOH/g   | D3242                         |                              | 0.10                                       |             |
| Additives   |                               | Report                       |  | 3           |
| Appearance  | White Bucket                  | Clear & Bright               |  | 2           |
| 1. Aromatics, vol %, OR   | D1319                         |                              | 25   |             |
| 2. Aromatics, vol %   | D6379                         |                              | 26.5                                       |             |
| Color, Saybolt  | D156, D6045                   | 18                           |  |             |
| Conductivity, pS/m  | D2624                         | Report                       |  | 3           |
| Copper Corrosion, 2 hrs. @ 212°F  | D130                          |                              | 1  |             |
| Physical Distillation, °F   | D86                           |                              |  | 5           |
| 10 % recovered  |                               |                              | 400  |             |
| 50 % recovered  |                               | Report                       |  |             |
| 90 % recovered  |                               | Report                       |  |             |
| End Point   |                               |                              | 572  |             |
| Residue, vol. %   |                               |                              | 1.5  |             |
| Loss, vol. %  |                               |                              | 1.5  |             |
| Gravity, °API   | D1298 or D4052                | 37                           | 51   |             |
| Flash Point, °F   | D56, D93, D3828               | 108                          |  | 7,8         |
| MSEP (at Origin)  | D3948                         | 85                           |  | 4           |
| Net Heat of Combustion – BTU/lb.  | D3338, D4529, D4809           | 18,400                       |  |             |
| Particulate Contaminant, mg/l   | D5452                         | Report                       |  |             |
| Filtration time   |                               | Report                       |  |             |
| Doctor Test, OR   | D4952                         |                              | Negative                                   |             |
| Mercaptan sulfur, wt. %   | D3227                         |                              | 0.003                                      | 1           |
| Sulfur, ppm wt.   | D1266, D2622, D4294,<br>D5453 |                              | 3000                                       |             |
| Existent Gum, mg/100ml  | D381, IP540                   |                              | 7  |             |
| Freeze point, °F (°C)   | D2386, D5972, D7153,<br>D7154 |                              | -40 (-40) / Jet A<br>-52.6 (-47) / Jet A-1 | 6           |
| Thermal Stability   | D3241                         |                              |  |             |
| (2.5 hrs. at control temperature 275°C)   |                               |                              |  |             |
| Filter Pressure Drop in mm/Hg   |                               |                              | 25   |             |
| Tube rating: One of the following requirements shall be met:                    |                               |                              |  |             |
| (1) Annex A1 VTR, VTR Color Code  |                               |                              | Less than 3                                |             |
| (2) Annex A2 ITR or Annex A3 ETR,   |                               |                              |  |             |
| nm average over area of 2.5 mm <sup>2</sup> (refer to D1655 for referee method) |                               |                              | (No Peacock or Abnormal Color Deposits)    |             |
| (2) Annex A2 ITR or Annex A3 ETR,   |                               |                              | 85   |             |
| Combustion Properties, one of the following properties must be met:             |                               |                              |  |             |
| 1) Smoke Point, mm OR   | D1322                         | 25.0                         |  |             |
| 2) Smoke point, mm  | D1322                         | 18.0                         |  |             |
| and Naphthalenes, vol. %  | D1840                         |                              | 3.0  |             |
| Viscosity, cSt -4 °F (-20 °C)   | D445, D7945                   |                              | 8.0  |             |

## JET A- SPECIFICATION FOR FUNGIBLE HIGH SULFUR AVIATION KEROSENE Cont'd

This fuel is for aviation use only.

- (1) The Mercaptan sulfur determination may be waived if the fuel is considered sweet by the doctor test described in ASTM D4952.
- (2) The finished product shall be visibly free of undissolved water, sediment, and suspended matter, and not exhibit any various shades of green, blue or red. Compliance will be determined with the product temperature adjusted to 77 °F.
- (3) Only those additives specified and within the concentration noted in the latest ASTM D1655 will be considered for acceptance. The use of any other additives is prohibited. Use of all additives must be approved prior to shipment and reported on the C of A. If any Metal Deactivator Additive (MDA) has been added, ~~Sunoco~~ **Carrier** Pipeline must be notified 48 hours in advance and reserves the right to refuse the shipment. If the batch has been treated with MDA, the following information is to be provided: (1) the purpose of adding MDA, (2) a breakdown of total metals present in the jet fuel before treating with MDA, (3) JFTOT test results both prior to and after adding MDA, (4) MDA treat rate, and (5) MDA product used. *Refer to Table 2.*
- (4) Per ASTM D1655 Water Separation Characteristics at Points Downstream - Results of downstream Test Method D3948 testing are not to be used as the sole reason for rejection of fuel, but they can indicate a mandatory need for further diligent investigation or remedial action, or both, such as passing the fuel through a clay adsorption unit to remove surfactants. However, the fuel may be rejected in the absence of satisfactory Test Method D3948 testing results if no documented evidence is presented that a detailed investigation was carried out demonstrating that the fuel was free of excess water and dirt and could be delivered into aircraft in a clean condition.
- (5) Referee method is ASTM D86. Test Method D2887 may be used as an alternative if correlated to D86 and reported as "Predicted D86".
- (6) For product to comply with JET A-1 parameters, the -52.6 °F (-47 °C) maximum specification must be met.
- (7) Aviation turbine fuel results obtained by Test Method D93 may be up to 1 °C higher than those obtained by Test Method D56. Results obtained by Test Method D3828 may be up to 2 °C lower than those obtained by Test Method D56, which is the preferred method. In case of dispute, Test Method D56 shall apply.
- (8) Minimum origin Flash Point of 105 °F is acceptable for Jet fuel batches being re-certified at Shipper delivery locations.

**15EXP2 - SPECIFICATION FOR SEGREGATED 15 PPM #2 MOTOR VEHICLE  
ULTRA LOW SULFUR DIESEL FUEL FOR EXPORT <sup>(1)</sup>**

***15EXP2 SPECIFICATIONS ARE IDENTICAL TO 15MV2 - SPECIFICATION FOR FUNGIBLE 15  
PPM #2 MOTOR VEHICLE ULTRA LOW SULFUR DIESEL FUEL (pg. 16), WITH THE  
EXCEPTION OF NOTE # 1, AS FOLLOWS:***

***Note (1) “This diesel fuel is for export from the United States only”.***

**JET A-FTZ - SPECIFICATION FOR SEGREGATED HIGH SULFUR  
AVIATION KEROSENE**

**JET A-FTZ SPECIFICATIONS ARE IDENTICAL TO JET A FUNGIBLE SPECIFICATION (pg. 20),  
WITH THE EXCEPTION OF NOTE # 1, AS FOLLOWS:**

**Note (1) “This Jet fuel is for export from the United States only”.**

## MIXED BUTANE - SPECIFICATION FOR FUNGIBLE MIXED BUTANE

| <u>PRODUCT PROPERTY</u>       | <u>ASTM<br/>TEST METHOD</u> | <u>ORIGIN SPECIFICATIONS</u> |                | <u>NOTE</u> |
|-------------------------------|-----------------------------|------------------------------|----------------|-------------|
|                               |                             | <u>MINIMUM</u>               | <u>MAXIMUM</u> |             |
| Vapor Pressure, psia @ 100 °F | D2598, D6897                |                              | Report         |             |
| Relative Density @ 60/60 °F   | D1657, D2598                | Report                       |                |             |
| Corrosion, Copper Strip       | D1838                       |                              | 1              |             |
| Sulfur, ppmw                  | D6667                       |                              | 30             |             |
| Composition, Liq. Volume %:   | D2163                       |                              |                |             |
| Propane                       |                             |                              | 4.00           |             |
| Iso-butane                    |                             |                              | 40.00          |             |
| N-butane                      |                             | 55.00                        |                |             |
| Pentanes                      |                             |                              | 20.0           |             |
| Hexane and heavier            |                             |                              | 1              | 2           |
| Olefins                       |                             |                              | 5              |             |
| Hydrogen Sulfide              | D2420                       |                              | Pass           |             |
| Fluorides, ppmw               | D7359                       |                              | 1              |             |
| Free water content            |                             |                              | None           |             |
| Additives                     | See note 1                  |                              |                |             |

Note: The specification defines only a basic purity for this product. This product is to be free of any contaminants that might render the product unacceptable. Specific contaminants which may render product unacceptable, include but are not limited to dirt, rust, scale and all other types of solids contaminants, caustics, chlorides, oxygenates, heavy metals, glycol, inorganic gases and any compound added to the product to enhance the ability to meet these specifications.

- (1) Additive Restrictions – *Refer to Table 2.*
- (2) Inkster deliveries: 2 % maximum for hexane and heavier.