# ۱ –مشخصات کیفی محصولات شرکت پتروشیمی بندر امام

a. S-PVC

b. LDPE

c. HDPE

d. SBR

e. BENZENE

f. ETHANE RECOVERY

g. HYDROCHLORIC ACID

h. MIXED- XYLENE

i. MTBE

j. OLEFINE

k. PARA-XYLENE

l. SODIUM HYPOCHOLORITE

m. VCM

# S-PVC

| S-PVC | GRADE | | | test method | | | |
|---|---|---|---|---|---|---|---|
| | S-6058 | S-6558 | S-7054 | DIN | ISO | ASTM | HULS |
| K-Value | 59-61 | 64-66 | 69-71 | 53726 | | | |
| Viscosity number (cm3/gr) | 85-92 | 101-109 | 120-129 | 53726 | | | |
| Bulk density (g/l) | 550-610 | 540-600 | 445-505 | 53466 | | | |
| Sieve analysis | | | | | | | |
| > 63 µm (%) | 90 min | 90 min | 85 min | 53734 | | | |
| > 250 µm (%) | 5 max | 5 max | 0.5 max | 53734 | | | |
| Porosity (plasticiser absorption)(gr DOP/100gr PVC) | 10 min | 30 min | 30 min | | | D-3367 | |
| Volatile matter (%) | 0.2 max | 0.2 max | 0.2 max | | 1269 | | |
| Flowability (S/150 g) (10 mm nozzle) | 4 max | 4 max | 4 max | | | | 6.1 |
| Dark resin particles | 30 max | 30 max | 30 max | | | | 6.7 |
| Fish eyes | 5 max | 5 max | 5 max | | | | 6.9 |
| Sulfate ash (wt%) | 0.05 max | 0.05 max | 0.05 max | 53568/2 | | | |

# کاربردهای S-PVC

| Applications | با نرم کننده | | | بدون نرم کننده | | |
|---|---|---|---|---|---|---|
| | EXTRUSION | INJECTION | CALENDERING | EXTRUSION | INJECTION | CALENDERING |
| **Grade S-6058** | | | تهیه کامپاندهای پلیمری | فیلمهای شفاف، ورق روکش سیم | تزریقی ، اتصالات، کابینت، برقی، قطعات ساختمان | فیلم و کف پوش |
| **Grade S-6558** | | | | لوله های سخت، فیلمهای شفاف | تزریقی ، اتصالات | |
| **Grade S-7054** | شیلنگ، اتصالات، کابل ارتجاعی، روکش کابل ، ورق و سیم و فیلم | قطعات تزریقی | فیلم و کف پوش | | | |

| TYPE | PRODUCT | PROPERTIES | MFI (190°C/2.16 KG) | DENSITY | SOFTENING POINT | HAZE | GLOSS@60°C | Elongation @Break(MD) | Elongation @Break(TD) | tensile @Break(MD) | dart impact |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LDPE (film grade) | (LDPE)LF0200 | Test Method | ASTM D-1238 | TSTM 209 B | ASTM D-1525 | ASTM D-1003 | ASTM D-523 | ASTM D-882 | ASTM D-882 | ASTM D-882 | ASTM D-1709 |
| | | Value | 1.8-2.2 | 0.9190-0.9225 | 92-96 | 15 MAX | 60 min | 330 min | 600 min | 160 min | 100 min |
| | | Unit | gr/10 min | gr/ml | °C | % | gu | % | % | kg/cm2 | gr |
| | (LDPE)LF0450 | PROPERTIES | MFI (190°C/2.16 KG) | DENSITY | HAZE | GLOSS@60°C | Vicat SOFTENING Temp | Tensile on film | Film Elongation | tensile on sheet | Sheet Elongation |
| | | Test Method | ASTM D-1238 | TSTM 209 B | ASTM D-1003 | ASTM D-523 | ASTM D-1525 | ASTM D-882 | ASTM D-882 | ASTM D-638 | ASTM D-638 |
| | | Value | 4-5 | 0.9190-0.9225 | 12 MAX | 70 min | 92-94 | 170 min | 250 min | 80 min | 350 min |
| | | Unit | gr/10 min | gr/ml | % | gu | °C | kg/cm2 | % | kg/cm2 | % |
| | (LDPE)LH0050 | PROPERTIES | MFI (190°C/2.16 KG) | DENSITY | Vicat SOFTENING Temp | Elongation @Break(MD) | Elongation @Break(TD) | tensile @Break | HDT | dart impact | |
| | | Test Method | ASTM D-1238 | TSTM 209 B | ASTM D-1525 | ASTM D-882 | ASTM D-882 | ASTM D-882 | ASTM D-648 | ASTM D-1709 | |
| | | Value | 0.43-0.57 | 0.9170-0.922 | 93-97 | 280 min | 550 min | 230 min | 52-64 | 130 min | |
| | | Unit | gr/10 min | gr/ml | °C | % | % | kg/cm2 | °C | gr | |
| | (LDPE)LH0075 | PROPERTIES | MFI (190°C/2.16 KG) | DENSITY | Vicat SOFTENING Temp | Elongation @Break(MD) | Elongation @Break(TD) | tensile @Break | HDT | dart impact | |
| | | Test Method | ASTM D-1238 | TSTM 209 B | ASTM D-1525 | ASTM D-882 | ASTM D-882 | ASTM D-882 | ASTM D-648 | ASTM D-1709 | |
| | | Value | 0.68-0.58 | 0.9190-0.9225 | 93-97 | 300 min | 450 min | 170 min | 30-36 | 120 min | |
| | | Unit | gr/10 min | gr/ml | °C | % | % | kg/cm2 | °C | gr | |
| | (LDPE)LH0030 | Test Name | MFI | DENSITY | Vicat SOFTENING Temp | Tensile @Break(TD) min | Tensile @Break(MD) min | Elongation @Break(TD) min | Elongation @Break(MD) min | Brittlness Temp.max | Dielectrik Constant |
| | | Test Method | ASTM D-1238 | TSTM 209 B | ASTM D-1525 | ASTM D-882 | ASTM D-882 | ASTM D-882 | ASTM D-882 | ASTM D-748 | ASTM D-150 |
| | | Unit | gr/10 min | gr/ml | °C | kg/cm2 | kg/cm2 | % | % | °C | KV |
| | | Quantity | 0.25-0.35 | 0.9190-0.9225 | 93-97 | 150 | 250 | 500 | 290 | <-90 | 65-100 |

# کاربردهای LDPE

| TYPE | PRODUCT | Application |
|---|---|---|
| film | (LDPE)LF0200 | فیلم و یا لایه مورد استفاده برای تولید کیسه های کوچک با قابلیت عبور دادن نور در حد مطلوب |
| | (LDPE)LF0450 | بسته بندی مواد خوراکی |
| | (LDPE)LH0050 | استفاده پوششی برای مصارف سنگین از قبیل استفاده در کارهای صنعتی و زراعتی |
| | (LDPE)LH0075 | فیلم و یا لایه برای بسته بندی مصارف خانگی و کیسه های کوچک |
| | (LDPE)LH0030 | روکش کابلهای مخابراتی |

# HDPE

| type | PRODUCT | PROPERTIES | MFI (190°C/2.16KG) | DENSITY | IZOD Impact Strenght | Tensile Strenght @Break | Elongation | Yellow Index | Ash Content | Volatile Matter |
|---|---|---|---|---|---|---|---|---|---|---|
| BLOW MOLDING | HDPE(HB 0035) | Test Method | ASTM D-1238 | ASTM D-1505 | ASTM D-256 | ASTM D-638 | ASTM D-638 | ASTM D-1925 | ASTM D-1063 | ASTM D-1960 |
| | | Value | 0.28-0.43 | 0.959±0.003 | 25 min | 290 min | 900 min | -5 max | 0.06 max | 0.05 max |
| | | Unit | gr/10 min | gr/ml | kg.cm/cm | kg/cm2 | % | - | wt.% | wt.% |
| **Application** | | | | | | | | | | |
| لوازم خانگی، اسباب بازی و لوازم بهداشتی | | | | | | | | | | |

# SBR

| PRODUCT | PROPERTIES | Volatile Matter | Ash | Organic Acid | Soap | Bound Styrene | Raw Viscosity (ML 1+4 @ 100°C | Compound Viscosity (ML 1+4 @ 100°C | tensileensile Viscosil | Ultimate Elogation (35 Minutes Cure) | 300% Modulus (35 Minutes Cure) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SBR 1500 | Test Method | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1646 | ASTM D-1646 | ASTM D-412 | ASTM D-412 | ASTM D-412 |
| | Value | 0.75 max | 1.5 max | 5-7.25 | 0.5 max | 22.5-24.5 | 46-58 | 84 max | 250 min | 470 min | 119-159 |
| | Unit | %wt | %wt | %wt | %wt | %wt | - | - | kg/cm2 | % | kg/cm2 |
| SBR 1502 | PROPERTIES | Volatile Matter | Ash | Organic Acid | Soap | Bound Styrene | Raw Viscosity (ML 1+4 @ 100°C | Compound Viscosity (ML 1+4 @ 100°C | tensileensile Viscosil | Ultimate Elogation (35 Minutes Cure) | 300% Modulus (35 Minutes Cure) |
| | Test Method | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1646 | ASTM D-1646 | ASTM D-412 | ASTM D-412 | ASTM D-412 |
| | Value | 0.75 max | 1.5 max | 4.75-7 | 0.5 max | 22.5-24.5 | 46-58 | 84 max | 250 min | 350 min | 167-207 |
| | Unit | %wt | %wt | %wt | %wt | %wt | - | - | kg/cm2 | % | kg/cm2 |
| SBR 1712 | PROPERTIES | Volatile Matter | Ash | Organic Acid | Soap | Bound Styrene | Raw Viscosity (ML 1+4 @ | Compound Viscosity (ML 1+4 @ 100°C | tensileensile Viscosil | Ultimate Elogation (35 Minutes Cure) | 300% Modulus (35 Minutes Cure) |
| | Test Method | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1416 | ASTM D-1646 | ASTM D-1646 | ASTM D-412 | ASTM D-412 | ASTM D-412 |
| | Value | 0.75 max | 1.5 max | 3.9-5.7 | 0.5 max | 22.5-24.5 | 42-52 | 62 max | 200 min | 530 min | 79-109 |
| | Unit | %wt | %wt | %wt | %wt | %wt | - | - | kg/cm2 | % | kg/cm2 |

| Application | |
|---|---|
| SBR 1500 | تایر وتیوب، روکش لاستیک، تسمه نقاله، انواع تسمه صنایع مکانیکی و کابل |
| SBR 1502 | پوشش کف ساختمان، صنایع کفش، تایر دوچرخه، اسباب بازی، تایر، قابل مصرف در صنایع مکانیک و کابل |
| SBR 1712 | تایر ، روکش تایر، تسمه نقاله، صنایع کفش، لاستیک صنعتی، انواع شیلنگ |

# BENZENE

| products | properties | Benzene | Toluene | Non Aromatics | Density at 15.6 C | appearance | Color Pt-Co Scale | Acid Wash Color | Acidity | |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | Test Method | D-4492 | D-4492 | D-4492 | D-4052 | Visual | D-1209 | D-848 | D-847 | |
| | value | 99.9 min | 150 max | 700 max | 0.882 0.886 | clear free of haze/sediment | 10 max | 1 max | no free acid | |
| | unit | wt.% | wt.ppm | wt.ppm | gr/cm3 | | | | mgr NaOH/100ml | |
| | **Copper Corrosion** | **Total Sulfur** | **Total Chlor** | **Br. Index** | **H2S & SO2 Content** | **Distillation Range** | **Solidification Point** | **Water Content** | **Thiophene** | **Methyl Cyclo hexane** |
| Test Method | D-849 | UOP 727 | IPAC/81 | IP-129 | D-853 | D-850 | D-852 | D-1064 | D-1085 | D-4452 |
| value | No.1a | 1 max | 2 max | 10 max | free of h2s/so2 | 1 max | 5.45 min | 200 max | 1 max | 200 max |
| unit | | wt.ppm | wt.ppm | mgr/100gr | | C | C | WT.PPM | WT.PPM | WT.PPM |

# ETHANE RECOVERY

| TYPICAL TEST | UNIT | SPECIFICATION | TEST METHOD |
|---|---|---|---|
| **METHANE** | MOL% | .0499 max | G.C |
| **CO2** | MOL% | 0.17 max | G.C |
| **ETHANE** | MOL% | 98.9891 min | G.C |
| **PROPANE** | MOL% | .75 max | G.C |
| **H2O** | MOL% | 0.0585 | SHAW DEW POINT |
| **COS** | MOL% | 0.0001 | |

# Hydrochloric Acid

| Product | Properties | HCL Purity | Iron,Fe | Free Chlorine, Cl2 |
|---|---|---|---|---|
| Hydrochloric Acid | Test Method | روش کارخانه ای | STD Method Vol.2 | DE NORA |
| | Value | 30 min | 7 max | 20 max |
| | Units | wt.% | wt.ppm | wt.ppm |
| **APPLICATION** | | | | |
| تولید جوهر نمک | | | | |
| صنایع حفاری | | | | |

# mixed-xylene

| products | properties | Density at 15.6 C | appearance | Color Pt-Co Scale | Acid Wash Color | Acidity | Copper Corrosion | H2S & SO2 Content | Distillation Range at 760 mmhg | I.B.P | D.P |
|---|---|---|---|---|---|---|---|---|---|---|---|
| mixed-xylene | Test Method | D-4052 | Visual | D-1209 | D-848 | D-847 | D-849 | D-853 | D-850 | D-850 | D-850 |
| | value | TO BE REPORTED | clear free of haze/sediment | 10 max | 2 max | no free acid | No.1a | free of h2s/so2 | 5 max | 137 min | 143 MAX |
| | unit | gr/cm3 | | | | mgr NaOH/100ml | | | C | C | C |
| | **PARA-XYLENE** | **ORTHO-XYLENE** | **ETHYL BENZENE** | **METHA XYLENE** | **BENZENE** | **TOLUENE** | **C9 AROMATICS** | **NON Aromatics** | **TOTAL SULFUR** | **TOTAL CHLORIDES** | **BROMINE INDEX** |
| Test Method | D-2306 | D-2306 | D-2306 | D-2306 | D-2306 | D-2306 | D-2306 | D-2306 | UOP 727 | IP-AK/81 | IP-129(MODIFIED) |
| value | 16 MIN | 16 MIN | 18.5 max | 49 max | .005 max | .04 max | .5 max | .1 max | 1 max | 1 max | 20 max |
| unit | wt.% | wt.% | wt.% | wt.% | wt.% | wt.% | wt.% | wt.% | wt.ppm | wt.ppm | mgr/100 gr |

# MTBE

| COMPOSITION | M.T.B.E | C4 | C5+ | MEOH | TBA | WATER |
|---|---|---|---|---|---|---|
| **Test Method** | ASTM D-5441 (UOP -900) | ASTM D-5441 (UOP -900) | ASTM D-5441 (UOP -900) | ASTM D-5441 (UOP -900) | ASTM D-5441 (UOP -900) | ASTM D-1364 |
| **value** | 98 min | .5max | 1 max | .7 max | .6 max | 500 max |
| **unit** | wt.% | wt.% | wt.% | wt.% | wt.% | ppm(wt) |

# OLEFINE PRODUCT

| products | properties | Density at 15.6 C | Copper Corrosion | Total Sulfur | lead content | 5% vol.rec. | 95% vol. rec. | paraffins | olefins | naphthenes | aromatics | doctor test | R.V.P | color saybolt |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dripoline Pyrolysis Gasoline (D.P.G) | Test Method | D-4052 | D-130 | D-3120 | D-3559 | D-86 | D-86 | G.C. | G.C. | G.C. | G.C. | D-4952 | D-323 | D-156 |
| | value | 0.76 0.805 | No.1a | 220 max | 10 max | 37 min | 190max | – | – | – | 39 min | POSITIVE | 10 max | 12 min |
| | unit | gr/cm3 | – | wt.ppm | wt.ppm | C | C | wt.% | wt.% | wt.% | wt.% | WT.PPM | psig | – |

| products | properties | ETHYLENE | IMPURITY PARAFFINS | PROPYLENE &HIGHER OLEFINS | ACETYLENE | CARBON MONOXIDE | CARBON DIOXIDE | HYDROGEN | TOTAL SULFUR | OXYGENE | WATER CONTENT | Ammonium+Amine comp |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ETHYLENE | Test Method | G.C | G.C | G.C | G.C | G.C | G.C | G.C | D-3246 | G.C | SHADEW POINT | G.C |
| | value | 99.95 min | 500 max | 10 max | 3 max | 3 max | 3 max | 5 max | 2 max | 2 max | 1 max | nil |
| | unit | mol% | vol.ppm | vol.ppm | vol.ppm | vol.ppm | vol.ppm | vol.ppm | wt.ppm | vol.ppm | vol.ppm | vol.ppm |

# PARA-xylene

| products | properties | purity | non-AR | distillation range | T-sulfur | T-chloride | Sp.Gr at 60 F/60 F | H2S & SO2 Content |
|---|---|---|---|---|---|---|---|---|
| PARA-xylene | Test Method | D-3798 | D-3798 | D-850 | UOP-727 | EP/AK-81 | D-4052 | D-853 |
| | value | 99.7 min | .2 max | 138.4±2 max | 1 max | 1 max | 0.865 0.8661 | free |
| | unit | wt.% | wt.% | °C | vol.ppm | vol.ppm | gr/cm3 | – |
| **products** | **Appearance** | **TOL+BZ** | **Ethylbenzene** | **color (pt-co scale)** | **M-XYLENE** | **O-XYLENE** | **acid wash color** | |
| PARA-xylene | VISUAL | UOP 720 | D-3798 | D-1209 | D-3798 | D-3798 | ASTM 848 | |
| | colorness clear | 300 max | 0.3 max | 20 max | 0.25 max | 0.1 max | 1 max | |
| | – | wt.ppm | wt.% | – | wt.% | wt.% | – | |

# SODIUM HYPOCHOLORITE

| typical test | free chlorine,cl2 | total alkalinity |
|---|---|---|
| Test Method | روش کارخانه ای | روش کارخانه ای |
| value | 10% min | 4% max |
| unit | wt.% | wt.% |
| **APPLICATION** | | |
| صنایع تصفیه شکر | | |
| کاغذ سازی | | |
| گند زدایی از استخرها | | |
| رنگ بری | | |

# VCM

| TYPICAL TEST | PURITY | METHYL CHLORIDE | | ACETYLENE | 1,3 BUTADIENE | VINYL ACETYLENE | ETHYL CHLORIDE | EDC | PROPYLENE |
|---|---|---|---|---|---|---|---|---|---|
| | | FOR SHIPPING | FOR PVC | | | | | | |
| **Test Method** | GC | GC | GC | GC | GC | GC | GC | GC | GC |
| **value** | 99.98 min | 60 max | 70 max | 1 max | 5 max | 1 max | 5 max | 1 max | 1 max |
| **unit** | wt.% | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm |

| TYPICAL TEST | ETHYLENE | CHLOROFORM | CARBON TETRA CHLORIDE | WATER CONTENT | IRON | NON VOLATILE RESIDUE | ACIDITY AS HCL | | INHIBITORS HYDROQUINON | | APPEARANCE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | FOR SHIPPING | FOR PVC | FOR SHIPPING | FOR PVC | |
| **Test Method** | GC | GC | GC | ASTM D-1744 | ASTM D-1068 | T.S.K | ASTM D-2790 | ASTM D-2790 | روش کارخانه ای | روش کارخانه ای | VISUAL |
| **value** | 1 max | 1 max | 1 max | 200max | 0.5 max | 10 max | 0.5 max | 1 max | 15±5 | 7 max | CLEAR |
| **unit** | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | wt.ppm | |

| APPLICATION |
|---|
| تولید pvc |

# ۲ –مشخصات کیفی محصولات شرکت پتروشیمی بوعلی سینا

a. BENZENE

b. PARA-XYLENE

c. O-XYLENE

d. LIGHT END

e. RAFFINATE

f. HEAVYAROMATIC

g. LPG

h. C5+

i. REFORMATE 2

j. TOLUENE +C9 AROMATIC

k. NAPHTHA HEAVY END

# BENZENE SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **Benzene** | WT% | 99.9 min | ASTM D-4492 |
| **Non-Aromatic** | WT% | 0.08wt% max. | ASTM D-4492 |
| **Toluene** | WT% | 0.02 wt% max. | ASTM D-4492 |
| **Specific Gravity** | - | 0.882-0.886 | ASTM D-3505 |
| **Methyl cyclo hexane** | WT% | 0.02 max | ASTM D-4492 |
| **chlorine** | ppm | 1 max | ASTM D-4929 |
| **Acidity** | mg NaOH/100mg | No free acid | ASTM D-847 |
| **solidification point** | Centigrade | 6 | ASTM D-852 |
| **distillation range** | Centigrade | 2 max | ASTM D-850 |
| **total nitrogen** | ppm | 1 max | ASTM D-4629 |
| **total solfur** | ppm | 1 max | ASTM D-4045 |
| **color (pt-co) scale** | - | 10 max | ASTM D-1209 |
| **SO2/ H2S content** | - | Free of H2s/SO2 | ASTM D-853 |
| **Acid wash color** | - | 1 max | ASTM D-848 |
| **copper corrosion** | - | No.1a | ASTM D-849 |
| **thiophene** | ppm | 1 max | ASTM D-1685 |
| **Br.Index** | mg/100 gr | 10 max | ASTM D-1744 |
| **water content** | ppm | Saturated | ASTM D-1744 |

# P-XYLENE SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **P-xylene** | WT% | 99.7 min | ASTM D-3798 |
| **Non-Aromatic** | WT% | 0.01 max. | ASTM D-3798 |
| **BZ+TOL** | WT% | 0.01 max. | ASTM D-3798 |
| **Ethylbenzene** | WT% | 0.15 max. | ASTM D-3798 |
| **O-xylene** | WT% | 0.09 max | ASTM D-3798 |
| **M-xylene** | WT% | 0.16 max | ASTM D-3798 |
| **total solfur** | ppm | 1 max | ASTM D-4045 |
| **Total Chloride** | ppm | 1 max | ASTM D-4929 |
| **Acid wash color** | - | 1 max | ASTM D-848 |
| **SO2/ H2S content** | - | Free of H2s/SO2 | ASTM D-853 |
| **distillation range** | Centigrade | 1 max | ASTM D-850 |
| **color (pt-co) scale** | - | 10 max | ASTM D-1209 |
| **Sp-Gr** | - | 0.858-0.875 | ASTM D-3505 |
| **Appearance** | - | clear | Visual |

# O-XYLENE SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **O-xylene** | WT% | 98.5 min | ASTM D-3797 |
| **Non-Aromatic** | WT% | 0.3 max. | ASTM D-3797 |
| **C9 & Heavier Aromatics** | WT% | 1 max | ASTM D-3797 |
| **total C8** | WT% | 98.5 min. | ASTM D-3797 |
| **distillation range** | Centigrade | 2 max | ASTM D-850 |
| **total solfur** | ppm | 1 max | ASTM D-4045 |
| **color (pt-co) scale** | - | 20 max | ASTM D-1209 |
| **Acidity** | - | None detected | ASTM D-847 |
| **SO2/ H2S content** | - | None detected | ASTM D-853 |

# LIGHT END SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **PONA** | | | ASTM D-5134 |
| **PARAFFINIC** | WT% | 86-97 | |
| **OLEFINIC** | WT% | 0 - 1.67 | |
| **NAPHTHENIC** | WT% | 0.47-5.5 | |
| **AROMATIC** | WT% | 0-5 | |
| **OTHERS** | WT% | 0-0.02 | |
| **TOTAL SULFUR** | ppm | 850-1260 | ASTM D-3120 |
| **WATER CONTENT** | ppm | 160 | ASTM D-1744 |

# RAFFINATE SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **RVP** | psia | Max 11 | ASTM D-323 |
| **IBP** | °C | Min 30 | ASTM D-86 |
| **FBP** | °C | Max 130 | ASTM D-86 |
| **PARAFFINIC** | wt% | Min 70 | |
| **OLEFINIC** | wt% | Max 14 | |
| DENSITY@ 15.6 °C | kg/m3 | 650-740 | ASTM D-4052 |
| **TOTAL SULFUR** | ppm | Max 1.5 | ASTM D-4045 |
| **COLOR SAYBOLT** | | Min +18 | ASTM D-156 |
| **LEAD** | ppb | Max 5 | GFAAS |

# HEAVYAROMATIC SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **GC COMPOSITION** | | | ASTM D-5134 |
| **TOTAL C8A** | wt% | Max. 1 | |
| **C9 AROMATIC** | wt% | Max. 6 | |
| **C10+ AROMATICS** | wt% | Min. 93 | |
| **FLASH POINT** | centigrade | Min. 65 | ASTM D-93 |
| DENSITY | gr/cm3 | 0.89-0.95 | ASTM D-4052 |
| **SO2/ H2S content** | ppm | Free of H2s/SO2 | ASTM D-853 |

# LPG SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **GC** | | | ISO 7941 |
| **H2** | mol% | Max. 1.5 | |
| **C1** | mol% | Max. 0.5 | |
| **C2** | mol% | Max. 9 | |
| **C5** | mol% | Max. 2.5 | |
| C6+ | mol% | Max. 0.4 | |
| **N2** | mol% | Max. 0.1 | |

# C5 SPESIFICATION

| | UNIT | P | O | N | A | TOTAL |
|---|---|---|---|---|---|---|
| **C2** | WT% | 0.02 | | | | 0.02 |
| **C3** | WT% | 0.06 | | | | 0.06 |
| **C4** | WT% | 0.3 | | | | 0.3 |
| **C5** | WT% | 8.16 | 77.6 | 12.46 | | 98.22 |
| **C6** | WT% | 0.01 | 1.37 | | 0.01 | 1.39 |
| TOTAL | WT% | 8.55 | 78.98 | 12.46 | 0.01 | 100 |

| | | |
|---|---|---|
| **SP.Gr** | | 0.65-0.7 |
| **Br.No** | | 100-181 |
| **M.A.V** | | 1.3-8.6 |

# REFORMATE SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **RVP** | psia | Max 11 | ASTM D-323 |
| **AROMATIC** | wt% | Min 70 | GC |
| **BENZENE** | wt% | Max 1 | GC |
| DENSITY@ 15.6 °C | kg/m3 | 740-840 | ASTM D-4052 |
| **TOTAL SULFUR** | ppm | Max 2 | ASTM D-4045 |
| **RON** | | Min 95 | ASTM D-2699 |

**Note: Predicted octane number is minimum 95**

# TOLUENE +C9 AROMATIC SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **RVP** | psia | Max 5 | ASTM D-323 |
| **TOLUENE** | wt% | 55-85 | GC |
| **C9 AROMATIC** | wt% | 10-40 | GC |
| **C8 AROMATIC** | wt% | Max 3 | GC |
| **BENZENE** | wt% | Max 1 | GC |
| **NON AROMATIC (C6-C9)** | wt% | Max 2 | GC |
| DENSITY@ 15.6 °C | kg/m3 | 850-900 | ASTM D-4052 |
| **TOTAL SULFUR** | ppm | Max 1 | ASTM D-4045 |

# NAPHTHA HEAVY END SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **IBP** | °C | 165-179 | ASTM D-86 |
| **10%** | | 177-186 | |
| **30%** | | 182-194 | |
| **50%** | | 190-205 | |
| **90%** | | 250-280 | |
| **FBP** | | 297-330 | |
| **Total Sulfur** | ppm | 1800 Max. | ASTM D-3120 |
| **color** | ASTM color | 2 Max | ASTM D-1500 |
| **Flash point** | Centigrade | 55 Min. | ASTM D-93 |
| **Density at 15 °C** | g/nl | 0.78-0.84 | ASTM D-4052 |

# ۳ -مشخصات کیفی محصولات شرکت پتروشیمی اروند

a. NaOH
b. EDC
c. VCM
d. S-PVC
e. E-PVC

# NaOH PRODUCTION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| NaOH | WT% | Min 48.5 | Uhde A59.01.04/2.4.5.02 |
| NaCl | ppm by wt | Max.100 | Uhde A59.02.01/2.4.5.04 |
| Fe | ppm by wt | Max.3 | Uhde A59.09.01/2.4.5.06 |
| Sp.Gr@15.6°C | | 1.515 Min. | Uhde A59.01.03/2.4.5.03 |
| APPEARANCE | | clear | VISUAL |
| NaClO3 | ppm by wt | Max.50 | Uhde A59.10.02 |

# EDC PRODUCTION

**1,2 DI CHLORO ETHANE ( EDC) Ethylene Dichloride**

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| EDC PURITY | WT% | Min 99.9 | Uhde GC No:39 |
| DENSITY @ 15.6 °C | kg/m3 | 1253 | |
| LOW BOLL (<83.5°C) | ppm by wt | Max.300 | Uhde GC No:39 |
| HIGH BOLL (>83.5°C) | ppm by wt | Max.600 | Uhde GC No:39 |
| TOTAL ORGANIC IMPURILES | WT% | 0.1 | Uhde GC No:39 |
| NON VOLATILE MATTER | ppm by wt | 15 | Uhde GC No:18(ASTM D2109) |
| HYDROGEN CHLORIDE | ppm by wt | Max.5 | Uhde No:4 |
| WATER | ppm by wt | Max.15 | Uhde No:13 |
| TOTAL IRON | ppm by wt | Max.0.5 | Uhde No:25 |
| FREE CHLORINE | ppm by wt | Max.2 | Uhde No:10 |
| COLOR(APHA) | ppm by wt | Max.10 | Uhde GC No:10(ASTM D2108) |

## APPLICATION

تهیه حلالها و تهیه VCM

# VC PRODUCTION

## VINILE CHLORIDE MONOMER

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| vinil chloride (water, free basis) | WT% | Min 99.98 | Uhde GC No:45 |
| methyl chloride (CH3CL) | ppm by wt | Max 80 | Uhde GC No:45 |
| ACETYLENE | ppm by wt | Max.1 | Uhde GC No:45 |
| 1,3 BUTADIENE | ppm by wt | Max.10 | Uhde GC No:45 |
| ethane& ethene | ppm by wt | Max.2 | Uhde GC No:45 |
| propene | ppm by wt | Max.4 | Uhde GC No:45 |
| 1,2 EDC | ppm by wt | Max.2 | Uhde GC No:45 |
| ethyl chloride(C2H5CL) | ppm by wt | Max.50 | Uhde GC No:45 |
| Monovinylacethylene (C4H4) | ppm by wt | Max.5 | Uhde GC No:45 |
| HYDROGEN CHLORIDE | ppm by wt | Max.1 | Uhde GC No:45 |
| ccl4 | ppm by wt | trace | Uhde GC No:45 |
| hydroqulune | ppm by wt | Max.1 | GC |
| iron | ppm by wt | Max.0.5 | Uhde No:27 |
| water | ppm by wt | Max.30 | Uhde No:12 |
| non volatlles | ppm by wt | Max.15 | Uhde No:16 |
| nitrogen | free of N2 | | Uhde No:33 |
| color | COLORLESS | | Uhde No:19 , ASTM D2108 |
| appearance | clear and free of suspended matter | | |

## APPLICATION

تولید PVC

| S-PVC | GRADE | | | | | | | | test method | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | DIN | ISO |
| | S-5831 | S-6031 | S-6532 | S-6732 | S-6542 | S-7042 | S-7242 | S-8040 | | |
| K-Value | 58±1 | 60±1 | 65±1 | 67±1 | 65±1 | 70±1 | 72±1 | 80±1 | | 1628-2 |
| Viscosity number | 82 | 87 | 105 | 113 | 105 | 125 | 128-136 | 164-172 | | 1682-2 |
| Bulk density (g/l) | 540-600 | 520-580 | 550-610 | 550-610 | 460-520 | 450-510 | 430-490 | 420-480 | 60 | 60 |
| Sieve analysis | | | | | | | | | | |
| > 63 µm (%) | 95-100 | 95-100 | 95-100 | 95-100 | 95-100 | 95-100 | 95-100 | 95-100 | | 4610 |
| > 250 µm (%) | 0-1 | 0-1 | 0-5 | 0-5 | 0-1 | 0-1 | 0-1 | 0-1 | | 4610 |
| Retained on 0.4 mm sieve (%) | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | < 1 | | 4610 |
| Porosity (plasticiser absorption) | 14-20 | 16-22 | 19-25 | 18-24 | 24-30 | 29-35 | 30-35 | 30-35 | | 4608 |
| Volatile matter (%) | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 | | 1269 |
| Flowability (S/150 g) (10 mm nozzle) | ≤ 25 | ≤ 25 | ≤ 25 | ≤ 25 | ≤ 35 | ≤ 35 | ≤ 35 | ≤ 35 | | 6186 |
| Residual VCM(ppm) | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 | ≤ 1 | 53743 | 6401 |
| Dark resin particles | ≤ 20 | ≤ 20 | ≤ 20 | ≤ 20 | ≤ 20 | ≤ 20 | ≤ 10 | ≤ 10 | vinnolit F5 | in powder |
| Fish eyes | ≤ 5 | ≤ 5 | ≤ 20 | ≤ 20 | ≤2 | ≤ 2 | ≤2 | ≤2 | vinnolit H1 | felttest per 25 cm2 |
| Sulfate ash (wt%) | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | | 3451-1 |
| Designed Production capacity(T/Y) | 45000 | 45000 | 35000 | 55000 | 35000 | 60000 | 10000 | 15000 | | |

| Applications | |
|---|---|
| Grade A | rigid film,bottles,fitting,injection moulded parts |
| GradeB | rigid & semi rigidprofile and sheets |
| Grade C/D | rigid & semi rigid and plasticized PVC, pipe, profiles, tubes,sheet, film |
| Grade E | rigid & semi rigid and plasticized PVC, film,flexible articles |
| Grade G | plasticized film and profile, cable insulation, injection moulded parts, shoe soles |
| Grade F | plasticized film and profile,injection moulded parts, medical tubes,medical gloves |
| Grade H | plasticized film and profile, sealing, blood bag and medical tubes |

| E-PVC | GRADE | | | | | test method | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | DIN | ISO |
| K-Value | 59-61 | 64-66 | 67-69 | 71-73 | 74-76 | 53726 | 1628/2 |
| Sieve analysis | | | | | | | |
| > 63 µm (%) | ≤ 1.5 | ≤ 1.5 | ≤ 2 | ≤ 1.5 | ≤ 1.5 | 53724 | 565 |
| Volatile matter (%) | ≤ 0.3 | ≤ 0.3 | ≤ 0.3 | ≤ 0.3 | ≤ 0.3 | 7764/2 | 1269 |
| Methanol extract % | ≤ 2.5 | ≤ 2.5 | ≤ 2.5 | ≤ 2.5 | ≤ 2.5 | 53738 | 6427 |
| Thermostability (min) Mathiss drying oven | > 15 | > 15 | > 15 | > 20 | > 20 | vinnolit THMA 180 | |
| Paste viscosity After 1 h (pas) | ≤ 13 | ≤ 7 | ≤ 6 | ≤ 5 | ≤ 5 | EN 11468 | |
| | | | | | | EN 3219 | |
| | | | | | | PVC/DOP=100/60 23°C 16 sec | |
| Part of A-Quality (%) | ≥ 98 | ≥ 98 | ≥ 98 | ≥ 98 | ≥ 98 | | |
| Residual VCM(ppm) | ≤ 1 | ≤ 1 | ≤2 | ≤ 1 | ≤ 1 | 53743 | 6401 |
| Designed Production capacity(T/Y) | 6000 | 6000 | 8000 | 10000 | 10000 | | |

| Applications | |
|---|---|
| Grade A | wall covering |
| GradeB | leather foam, wall covering,cushion floor |
| Grade C | rigid foam for flooring, leather cloth, sealing compounds, coating and laminating |
| Grade D | wall covering, gloves, toys,cushion floor, leather cloth ,book binding |
| Grade E | leather skin,metal coating, molding, wall covering, gloves, marking films |

# ۴ –مشخصات کیفی محصولات شرکت پتروشیمی خوزستان

a. POLYCARBONATE PGPC- 710

b. POLYCARBONATE PGPC- 1012

c. POLYCARBONATE PGPC- 1215

d. POLYCARBONATE PGPC- 1518

e. POLYCARBONATE PGPC- 1822

f. POLYCARBONATE PGPC- 2230

g. EPIRAN-05(SPL)

h. EPIRAN-06(SPL)

i. EPIRAN-06

j. EPIRAN-01 X-75 LC

k. EPIRAN-01 X-75

l. BISPHENOL-A

| polycarbonate | PGPC-0710 | | | |
|---|---|---|---|---|
| **Analysis** | **unit** | **value** | **condition** | **test method** |
| MFI (300C) | g/10 min | 7.1-12 | 1.2 Kg load | ASTM D 1238 |
| Density | g/cm3 | 1.2 | 25C | ASTM D 792 |
| tensile Strength | Mpa | ≥ 60 | at yield | ASTM D 638 |
| Modulus of Elasticity | Mpa | 2000-2400 | - | ASTM D 638 |
| Elongation | % | ≥ 90 | at Break | ASTM D 638 |
| Dielectric Strength | Kv/mm | ≥ 20 | at 50 Hz | ASTM D 149 |
| Charpy Impact Strength | Kj/m2 | ≥ 20 | Notched | ASTM D 6110 |
| Vicat soft. Temp. | C | 142-146 | 50 N, 50 C/h | ASTM D 1525 |
| Transmitance | % | ≥ 80 | Thickness 2 mm | ASTM D 1003 |
| Solvent Content | ppm | Max.3000 | - | GC (int-st) |

## Application

**suitable for injection molding and extrusion, optical, business machines, packaging, sports, appliances, electrical, lighting, wire& cable, automotive, sheets**

| polycarbonate | PGPC-1012 | | | |
|---|---|---|---|---|
| **Analysis** | **unit** | **value** | **condition** | **test method** |
| MFI (300C) | g/10 min | 10.1-12 | 1.2 Kg load | ASTM D 1238 |
| Density | g/cm3 | 1.2 | 25C | ASTM D 792 |
| tensile Strength | Mpa | ≥ 60 | at yield | ASTM D 638 |
| Modulus of Elasticity | Mpa | 2000-2400 | - | ASTM D 638 |
| Elongation | % | ≥ 90 | at Break | ASTM D 638 |
| Dielectric Strength | Kv/mm | ≥ 20 | at 50 Hz | ASTM D 149 |
| Charpy Impact Strength | Kj/m2 | ≥ 20 | Notched | ASTM D 6110 |
| Vicat soft. Temp. | C | 142-146 | 50 N, 50 C/h | ASTM D 1525 |
| Transmitance | % | ≥ 80 | Thickness 2 mm | ASTM D 1003 |
| Solvent Content | ppm | Max.3000 | - | GC (int-st) |

## Application

**suitable for injection molding and extrusion, optical, business machines, packaging, sports, appliances, electrical, lighting, wire& cable, automotive, sheets**

| polycarbonate | PGPC-1215 | | | |
|---|---|---|---|---|
| **Analysis** | **unit** | **value** | **condition** | **test method** |
| MFI (300C) | g/10 min | 12.1-15 | 1.2 Kg load | ASTM D 1238 |
| Density | g/cm3 | 1.2 | 25C | ASTM D 792 |
| tensile Strength | Mpa | ≥ 60 | at yield | ASTM D 638 |
| Modulus of Elasticity | Mpa | 2000-2400 | - | ASTM D 638 |
| Elongation | % | ≥ 80 | at Break | ASTM D 638 |
| Dielectric Strength | Kv/mm | ≥ 20 | at 50 Hz | ASTM D 149 |
| Charpy Impact Strength | Kj/m2 | ≥ 20 | Notched | ASTM D 6110 |
| Vicat soft. Temp. | C | 141-145 | 50 N, 50 C/h | ASTM D 1525 |
| Transmitance | % | ≥ 80 | Thickness 2 mm | ASTM D 1003 |
| Solvent Content | ppm | Max.3000 | - | GC (int-st) |
| **Application** | | | | |
| **suitable for injection molding, optical, sports, electrical, wire& cable, sheets** | | | | |

| polycarbonate | PGPC-1518 | | | |
|---|---|---|---|---|
| **Analysis** | **unit** | **value** | **condition** | **test method** |
| MFI (300C) | g/10 min | 15.1-18 | 1.2 Kg load | ASTM D 1238 |
| Density | g/cm3 | 1.2 | 25C | ASTM D 792 |
| tensile Strength | Mpa | ≥ 60 | at yield | ASTM D 638 |
| Modulus of Elasticity | Mpa | 2000-2400 | - | ASTM D 638 |
| Elongation | % | ≥ 80 | at Break | ASTM D 638 |
| Dielectric Strength | Kv/mm | ≥ 20 | at 50 Hz | ASTM D 149 |
| Charpy Impact Strength | Kj/m2 | ≥ 20 | Notched | ASTM D 6110 |
| Vicat soft. Temp. | C | 141-145 | 50 N, 50 C/h | ASTM D 1525 |
| Transmitance | % | ≥ 80 | Thickness 2 mm | ASTM D 1003 |
| Solvent Content | ppm | Max.3000 | - | GC (int-st) |
| **Application** | | | | |
| **suitable for injection molding, optical, sports, electrical, wire& cable, sheets** | | | | |

| polycarbonate | PGPC-1822 | | | |
|---|---|---|---|---|
| **Analysis** | **unit** | **value** | **condition** | **test method** |
| MFI (300C) | g/10 min | 18.1-22 | 1.2 Kg load | ASTM D 1238 |
| Density | g/cm3 | 1.2 | 25C | ASTM D 792 |
| tensile Strength | Mpa | ≥ 60 | at yield | ASTM D 638 |
| Modulus of Elasticity | Mpa | 2000-2400 | - | ASTM D 638 |
| Elongation | % | ≥ 80 | at Break | ASTM D 638 |
| Dielectric Strength | Kv/mm | ≥ 20 | at 50 Hz | ASTM D 149 |
| Charpy Impact Strength | Kj/m2 | ≥ 20 | Notched | ASTM D 6110 |
| Vicat soft. Temp. | C | 140-144 | 50 N, 50 C/h | ASTM D 1525 |
| Transmitance | % | ≥ 80 | Thickness 2 mm | ASTM D 1003 |
| Solvent Content | ppm | Max.3000 | - | GC (int-st) |
| **Application** | | | | |
| **suitable for injection molding,sports,Automotive, electrical, Construction & housing** | | | | |

| polycarbonate | PGPC-2230 | | | |
|---|---|---|---|---|
| **Analysis** | **unit** | **value** | **condition** | **test method** |
| MFI (300C) | g/10 min | 22.1-30 | 1.2 Kg load | ASTM D 1238 |
| Density | g/cm3 | 1.2 | 25C | ASTM D 792 |
| tensile Strength | Mpa | ≥ 60 | at yield | ASTM D 638 |
| Modulus of Elasticity | Mpa | 2000-2400 | - | ASTM D 638 |
| Elongation | % | ≥ 50 | at Break | ASTM D 638 |
| Dielectric Strength | Kv/mm | ≥ 20 | at 50 Hz | ASTM D 149 |
| Charpy Impact Strength | Kj/m2 | ≥ 20 | Notched | ASTM D 6110 |
| Vicat soft. Temp. | C | 139-143 | 50 N, 50 C/h | ASTM D 1525 |
| Transmitance | % | ≥ 80 | Thickness 2 mm | ASTM D 1003 |
| Solvent Content | ppm | Max.3000 | - | GC (int-st) |

## Application

**suitable for injection molding,Automotive,Appliances,electrical, Construction & housing**

# EPIRAN-05(SPL)

**LIQUID EPOXY RESIN SPECIAL**

**PRODUCT DATA SHEET**

| PROPERTY | TEST METHOD | UNIT | GUARANTEE VALUES |
|---|---|---|---|
| Appearance | Visual | Visual | Clear Light Yellow Liquid |
| Epoxy Equivalent | ASTM D1652 | g/eq | 192-204 |
| Epoxy Value | ASTM D1652 | mol/100gr | 0.49-0.521 |
| Color | ASTM 1209 (APHA) | Pt-Co (APHA) | Max.100 |
| Viscosity at 25 °C | DIN 53015 | mpas | 15000-20000 |
| Hydrolysable Chlorine | ASTM 1726 | % wt | Max. 0.2 |
| Non-Volatile | DIN EN ISO 3251 | % wt | Min 99 |

## Application

for civil Engineering Coating, flooring, Adhesives, Mortars, Grouts, Industrial Maintenance & Marine Coating

# EPIRAN-06(SPL)

**LIQUID EPOXY RESIN SPECIAL**

**PRODUCT DATA SHEET**

| PROPERTY | TEST METHOD | UNIT | GUARANTEE VALUES |
|---|---|---|---|
| Appearance | Visual | Visual | Clear Light Yellow Liquid |
| Epoxy Equivalent | ASTM D1652 | g/eq | 185-192 |
| Epoxy Value | ASTM D1652 | mol/100gr | 0.52-0.54 |
| Color | ASTM 1209 | Pt-Co (APHA) | Max. 50 |
| Viscosity at 25 °C | DIN 53015 | mpas | 10000-14000 |
| Hydrolysable Chlorine | ASTM 1726 | % wt | Max. 0.1 |
| Non-Volatile | DIN EN ISO 3251 | % wt | Min 99.3 |

## Application

adhesives, casting, tooling, civil eng. Composites, Automotive, can and coatings, marine and protective coating, electrical and electronic use . Potting and encapsulation

# EPIRAN-06

**LIQUID EPOXY RESIN**

**PRODUCT DATA SHEET**

| PROPERTY | TEST METHOD | UNIT | GUARANTEE VALUES |
|---|---|---|---|
| Appearance | Visual | Visual | Clear Light Yellow Liquid |
| Epoxy Equivalent | ASTM D1652 | g/eq | 185-196 |
| Epoxy Value | ASTM D1652 | mol/100gr | 0.51-0.54 |
| Color | ASTM 1209 (APHA) | Pt-Co (APHA) | Max. 100 |
| Viscosity | DIN 53015 (at 25 C) | Mpas | <15000 |
| Hydrolysable Chlorine | ASTM 1726 | % wt | Max. 0.2 |
| Non-Volatile | DIN EN ISO 3251 | % wt | Min 99 |

## Application

adhesives, casting, tooling, civil eng. Composites, Automotive, can and coatings, marine and protective coating, electrical and electronic use . Potting and encapsulation

# EPIRAN-01 X-75 LC

**SOID EPOXY RESIN IN MIXED XYLENE**

**PRODUCT DATA SHEET**

| PROPERTY | TEST METHOD | UNIT | GUARANTEE VALUES |
|---|---|---|---|
| Appearance | Visual | Visual | Clear Light Yellow Liquid |
| Epoxy Equivalent | ASTM D1652 | g/eq | 434-555 |
| Epoxy Value | ASTM D1652 | mol/100gr | 0.18-0.23 |
| Color | ASTM 1209 (APHA) | Pt-Co (APHA) | Max. 40 |
| Viscosity | DIN 53015 (at 25 C) | Mpas | 6000-12000 |
| Hydrolysable Chlorine | ASTM 1726 | % wt | Max. 0.1 |
| %Non-Volatile | DIN EN ISO 3251 | % wt | 74-76 |

## Application

is used for cold cured varnished, solvent based 2-pack coatings for metals, as modifier in stoving enamel based on acrylics, alkyd-melamin resin systems and hot cured adhsives manufacture

# EPIRAN-01 X-75

**SOID EPOXY RESIN IN MIXED XYLENE**

**PRODUCT DATA SHEET**

| PROPERTY | TEST METHOD | UNIT | GUARANTEE VALUES |
|---|---|---|---|
| Appearance | Visual | Visual | Clear Light Yellow Liquid |
| Epoxy Equivalent | ASTM D1652 | g/eq | 434-555 |
| Epoxy Value | ASTM D1652 | mol/100gr | 0.18-0.23 |
| Color | ASTM 1209 (APHA) | Pt-Co (APHA) | Max.100 |
| Viscosity | DIN 53015 (at 25 C) | Mpas | 6000-12000 |
| Hydrolysable Chlorine | ASTM 1726 | % wt | Max. 0.1 |
| %Non-Volatile | DIN EN ISO 3251 | % wt | 74-76 |

## Application

is used for cold cured varnished, solvent based 2-pack coatings for metals, as modifier in stoving enamel based on acrylics, alkyd-melamin resin systems and hot cured adhsives manufacture

# BISPHENOL - A

**PRODUCT DATA SHEET**

| PROPERTY | TEST METHOD | UNIT | GUARANTEE VALUES |
|---|---|---|---|
| COLOR | ASTM D 1209 | APHA | < 10 |
| H2O | Karl Fischer | %wt | < 0.15 |
| p,p-BPA | GC (internal standard) | %wt | > 99.5 |
| Phenol | GC (internal standard) | ppm | < 50 |
| By product | GC (internal standard) | %wt | < 0.15 |

# ۵ –مشخصات کیفی محصولات شرکت پتروشیمی شهید تندگویان

a. PET(semi dull)-TG641

b. PET(super bright)-TG641

c. PET-BG841

d. PET-BG821

e. PET-BG781

# Polyethylene Terephthalate (semi dull)

| Grade | PARS PET-TG641 (Textile Grade) | | |
|---|---|---|---|
| **Item** | **Unit** | **value** | **test method** |
| **Intrinsic Viscosity** | dl/g | 0.64 ± 0.015 | ISO 1628-5 |
| | | | in combination with NVPET05 |
| **DEG Content** | wt% | 0.9 - 1.3 | ASTM E2409-4 |
| | | | in combination with WN-B010-9008E |
| **Color (CIE Lab)** | L* | ≥90 | ASTM D6290-5 |
| | b* | ≤4.5 | in combination with WN-B010-7110E |
| **Carboxyl End Group** | meq / Kg | ≤32 | ASTM D7409-7 |
| | | | in combination with WN-B010-7013E |
| **Melting Point** | °C | 255±3 | ASTM D3418-3 |
| | | | in combination with WN-B010-7089E |
| **TiO2 Content** | wt% | 0.3 ± 0.05 | WN-B010-7061E |
| **Water Content** | wt% | ≤0.3 | ASTM D6869-3 |
| | | | in combination with WN-B010-7159E |
| **Chips Weight** | g/100EA | 2.5±0.1 | ---- |

## APPLICATION

تولید منسوجات قابل استفاده در صنایع ایمنی و نظامی و مکانهای عمومی و صنعت حمل و نقل، تولید انواع پتو، ملافه، رومبلی، روکش صندلی، پرده، فرش و کفپوش

# Polyethylene Terephthalate (super bright)

| Grade | PARS PET-TG641 (Textile Grade) | | |
|---|---|---|---|
| **Item** | **Unit** | **value** | **test method** |
| **Intrinsic Viscosity** | dl/g | 0.64 ± 0.015 | ISO 1628-5<br>in combination with NVPET05 |
| **DEG Content** | wt% | 0.9 - 1.3 | ASTM E2409-4<br>in combination with WN-B010-9008E |
| **Color (CIE Lab)** | L* | ≥75 | ASTM D6290-5<br>in combination with WN-B010-7110E |
| | b* | ≤4.5 | |
| **Carboxyl End Group** | meq / Kg | ≤32 | ASTM D7409-7<br>in combination with WN-B010-7013E |
| **Melting Point** | °C | 255±3 | ASTM D3418-3<br>in combination with WN-B010-7089E |
| **Water Content** | wt% | ≤0.3 | ASTM D6869-3<br>in combination with WN-B010-7159E |
| **Chips Weight** | g/100EA | 2.5±0.1 | ---- |

## APPLICATION

تولید منسوجات با شفافیت بالا

# Polyethylene Terephthalate (Copolymer)

| Grade | PARS PET-BG841 (Bottle Grade) | | |
|---|---|---|---|
| **Item** | **Unit** | **value** | **test method** |
| **Intrinsic Viscosity** | dl/g | >0.84 | ISO 1628-5 in combination with NVPET05 |
| **DEG Content** | wt% | ≤1.5 | ASTM E2409-4 in combination with WN-B010-9008E |
| **Color (CIE Lab)** | L* | ≥90 | ASTM D6290-5 in combination with WN-B010-7110E |
| | b* | ≤2.0 | |
| **Carboxyl End Group** | meq / Kg | ≤32 | ASTM D7409-7 in combination with WN-B010-7013E |
| **Melting Point** | °C | 249±3 | ASTM D3418-3 in combination with WN-B010-7089E |
| **Acetaldehyde** | ppm | ≤1.0 | ASTM F2013-5 in combination with WN-B010-9013E |
| **Water Content** | wt% | ≤0.3 | ASTM D6869-3 in combination with WN-B010-7159E |

## APPLICATION

بسته بندی انواع مایعات شوینده، بهداشتی و آرایشی

# Polyethylene Terephthalate (Copolymer)

| Grade | PARS PET-BG821 (Bottle Grade) | | |
|---|---|---|---|
| **Item** | **Unit** | **value** | **test method** |
| **Intrinsic Viscosity** | dl/g | 0.82 ± 0.02 | ISO 1628-5<br>in combination with NVPET05 |
| **DEG Content** | wt% | ≤1.5 | ASTM E2409-4<br>in combination with WN-B010-9008E |
| **Color (CIE Lab)** | L* | ≥90 | ASTM D6290-5<br>in combination with WN-B010-7110E |
| | b* | ≤2.0 | |
| **Carboxyl End Group** | meq / Kg | ≤32 | ASTM D7409-7<br>in combination with WN-B010-7013E |
| **Melting Point** | °C | 249±3 | ASTM D3418-3<br>in combination with WN-B010-7089E |
| **Acetaldehyde** | ppm | ≤1.0 | ASTM F2013-5<br>in combination with WN-B010-9013E |
| **Water Content** | wt% | ≤0.3 | ASTM D6869-3<br>in combination with WN-B010-7159E |

## APPLICATION

بسته بندی انواع نوشیدنی های گازدار، بسته بندی مواد غذایی فاسد شدنی ، مخازن آب با حجم 4 لیتر و بالاتر

# Polyethylene Terephthalate (Copolymer)

| Grade | PARS PET-BG781 (Bottle Grade) | | |
|---|---|---|---|
| **Item** | **Unit** | **value** | **test method** |
| **Intrinsic Viscosity** | dl/g | 0.78 ± 0.02 | ISO 1628-5<br>in combination with NVPET05 |
| **DEG Content** | wt% | ≤1.5 | ASTM E2409-4<br>in combination with WN-B010-9008E |
| **Color (CIE Lab)** | L*<br>b* | ≥90<br>≤2.0 | ASTM D6290-5<br>in combination with WN-B010-7110E |
| **Carboxyl End Group** | meq / Kg | ≤32 | ASTM D7409-7<br>in combination with WN-B010-7013E |
| **Melting Point** | °C | 249±3 | ASTM D3418-3<br>in combination with WN-B010-7089E |
| **Acetaldehyde** | ppm | ≤1.0 | ASTM F2013-5<br>in combination with WN-B010-9013E |
| **Water Content** | wt% | ≤0.3 | ASTM D6869-3<br>in combination with WN-B010-7159E |

## APPLICATION

بسته بندی انواع آبهای نوشیدنی بدون گاز(آب تصفیه شده، آب معدنی) در بطریهای کوچک 0.5 1،1.5 لیتری،
بسته بندی مواد غذایی جامد و روغنهای خوراکی غیر معطر ، بسته بندی کالاهای لوکی و فانتزی

# ۶ –مشخصات کیفی محصولات شرکت پتروشیمی کارون

a. TOLUENE DI-ISOCYANATE

b. NaOCl

c. NITRIC ACID(HNO3)

d. MDI(Phase2)

e. HYDROCHLORIC ACID (HCL)

| TOLUENE DI-ISOCYANATE (TDI) | | | |
|---|---|---|---|
| **No.** | **Parameter** | **test method** | **Specification** |
| 1 | **Appearance** | visual | Clear Liq. |
| 2 | **purity (% by wt)** | H900.6500S | Min. 99.5 |
| 3 | **Colour (APHA)** | H900.1700S | Max.25 |
| 4 | **Hydrolyzable Chlorine (ppm by wt)** | H900.3500S | Max.60 |
| 5 | **Total Acidity (ppm by wt)** | H900.0500S | Max.40 |
| 6 | **Isomer ratio 2,4 TDI (%wt)** | H900.4100 | 80±1 |
| 7 | **Isomer ratio 2,6 TDI (%wt)** | H900.4100 | 20±1 |
| 8 | **Sp.gr at 25/4 °C** | s690.3000 | 1.22±0.02 |
| 9 | **NIC (ppm)** | H900.5800 | Max.30 |
| **APPLICATION** | | | |
| تولید روکشها و پوششها، درزگیر، چسبها و الاستومرها | | | |

| NaOCl | | | |
|---|---|---|---|
| **No.** | **Property** | **test method** | **Specification** |
| 1 | **Available Clorine (gr/lit)** | DENORA CH13 | 120-150 |
| 2 | **Excess Caustic (wt%)** | DENORA CH13 | 0.8-2 |
| 3 | **Color** | Visual | Light Yellow |
| 4 | **Fe (ppm)** | ASTM D2790 | <10 |

| Nitric Acid ( HNO3) | | | | |
|---|---|---|---|---|
| **No.** | **Parameter** | **test method** | **Specification** | **Value** |
| 1 | **Purity (by wt%)** | ASTM E 1584 | 62±2 | 62.8 |
| 2 | **Appearance** | Visual Check | Clear | Clear |
| 3 | **HNO2 (ppm by weight)** | PTM 1785 | < 150 | 6.5 |
| 4 | **Residue on Ignition (wt%)** | ASTM D 7348 | < 0.03 | Trace |
| 5 | **T-Fe (ppm by weight)** | D-2790 | < 10 | 2.7 |

| MDI (Phase 2) | | |
|---|---|---|
| **Typical composition , no guarantee data** | | |
| **No.** | **Parameter** | **Specification** |
| 1 | **Appearance** | dark colored liquid , or crystals Musty smell, volatile |
| 2 | **Melting point** | 42-44 °C min |
| 3 | **Specific Gravity at 18 ° C** | 1.18 |
| 4 | **NCO** | Min. 33.4 % wt |
| 5 | **Isocyanate equivalent wheight** | Max. 125.8 |
| 6 | **2,4 MDI content** | 1.7-2.3 % wt |
| 7 | **Hydrochloric acid** | Max. 30 ppm wt |
| 8 | **Ortho- dichlorobenzene** | Max. 20 ppm wt |
| 9 | **Phenyl isocyanate** | Max. 20 ppm wt |
| 10 | **Color APHA Y INDEX** | Max. 20 |
| **APPLICATION** | | |
| تولید فومهای پلی یورتان سخت جهت استفاده در عایقهای حرارتی (یخچالها، فریزرها و عایقهای ساختمانی) و تولید چسبهای محکم صنعتی | | |

| HYDROCHLORIC ACID (HCL) | | | |
|---|---|---|---|
| **No.** | **Parameter** | **Result** | **Specification** |
| 1 | **Appearance** | Colourless | Conforms |
| 2 | **Purity ( % by wt)** | 31 | min. 30 |
| 3 | **ODCB ( PPM BY WEIGHT)** | 0.8 | <3 |
| 4 | **Fe (ppm by weight)** | 0.46 | <3 |
| 5 | **water** | | Balance |

# ۷ -مشخصات کیفی محصولات شرکت پتروشیمی نوری

a. BENZENE

b. P-XYLENE

c. O-XYLENE

d. MIN-XYLENE

e. LIGHT END

f. C3+

g. HEAVY END

h. RAFFINATE

# BENZEN SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD |
|---|---|---|---|
| **Purity** | WT% | 99.9 Min | ASTM D4492 |
| **Toluene** | WT% | 0.015 Max | ASTM D4492 |
| **Non Aromatics** | WT% | 0.07 Max | ASTM D4492 |
| **Density @ 15.6 °C** | Gr/cm3 | 0.882-0.886 | ASTM D4052 |
| **Appearance** | - | Clear ,Free of haze/sediment | Visual |
| **Color (Pt-Co) Scale** | - | 15 Max | ASTM D1209 |
| **Acid Wash Color** | - | 1 Max | ASTM D848 |
| **Acidity** | mg NaOH/100mg | No free acid | ASTM D847 |
| **Copper Corrosion** | - | Pass 1A | ASTM D849 |
| **Total sulfur** | Wt ppm | 1 Max | ASTM D5453 |
| **H2S and SO2 content** | - | Free of H2S and SO2 | ASTM D853 |
| **Distillation** | °C | 1 Max (Including 80.1) | ASTM D850 |
| **Solidification point** | °C | 5.45 Min | ASTM D852 |
| **Water content** | Wt ppm | 200 Max | ASTM D1744 |
| **Thiophene** | Wt ppm | 1 Max | IFP9421 |
| **Total Chloride** | Wt ppm | 2 Max | ASTM D4929 |
| **Br.Index** | mg/100g | 10 Max | ASTM 1492 |
| **Total nitrogen** | Wt ppm | 1 Max | ASTM D4629 |
| **Methylcyclohexane** | Wt ppm | 400 Max | ASTM D4492 |

# P-XYLENE SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD | توضیحات |
|---|---|---|---|---|
| **Purity** | WT% | 99.7 Min | ASTM D3798 | جهت فروش داخل از این تست استفاده می شود |
| **Non Aromatics** | WT% | 0.2 Max | ASTM D3798 | جهت فروش داخل از این تست استفاده می شود |
| **Distillation Range** | °C | 2 Max (Including 138.3) | ASTM D850 | |
| **Total sulfur** | Wt ppm | 1 Max | ASTM D5453 | |
| **Total Chloride** | Wt ppm | 1 Max | ASTM D4929 | |
| **Sp.gr @ 15.6/15.6°C** | - | 0.8650-0.8661 | ASTM D4052 | |
| **H2S and SO2 content** | - | Free | ASTM D853 | |
| **Appearance** | - | Colorless,Clear | Visual | |
| **Tol+Bz** | Wt ppm | 300 Max | ASTM D3798 | جهت فروش داخل از این تست استفاده می شود |
| **Ethyle Benzene** | WT% | 0.3 Max | ASTM D3798 | جهت فروش داخل از این تست استفاده می شود |
| **Color (Pt-Co) Scale** | - | 20 Max | ASTM D1209 | |
| **M-xylene** | WT% | 0.25 Max | ASTM D3798 | جهت فروش داخل از این تست استفاده می شود |
| **O-xylene** | WT% | 0.1 Max | ASTM D3798 | جهت فروش داخل از این تست استفاده می شود |
| **Acid Wash Color** | - | 1 Max | ASTM D848 | |

# O-XYLENE SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD | توضیحات |
|---|---|---|---|---|
| **Purity** | WT% | 98.5 Min | ASTM D2306 ** | جهت فروش داخل ** |
| **Non Aromatics** | WT% | 1 Max* | ASTM D2306 ** | * این میزان جهت صادرات 0.5 میباشد. |
| **Bzn+C9 & Heavier Aromatics** | WT% | 1 Max | ASTM D2306 ** | |
| **Total C8 Aromatics + Toluene+ Ethyl Benzene** | WT% | 98.5 Min | ASTM D2306 ** | |
| **Distillation Range at 760 mmhg** | °C | 2 Max (Including 144.4) | ASTM D850 | |
| **Total sulfur** | Wt ppm | 1 Max | ASTM D5453 | |
| **Color (Pt-Co) Scale** | - | 20 Max | ASTM D1209 | |
| **Acidity** | - | None detected | ASTM D847 | |
| **Hydrocarbon residue after evaporation** | Wt ppm | 20 Max | ASTM D1353 | |
| **H2S and SO2 content** | - | None detected | ASTM D853 | |
| **Sp.gr @ 15.6/15.6°C** | - | 0.86-0.89 | ASTM D4052 | |

# MIN-XYLENE SPESIFICATION

| TYPICAL TEST | UNIT | SPESIFICATION | TEST METHOD | توضیحات |
|---|---|---|---|---|
| **Distillation Range** | °C | | ASTM D850 | |
| **IBP** | | MIN 137 | | |
| **FBP** | | MAX 143 | | |
| **RANGE** | | MAX 5 | | |
| **Density** | gr/cm3 | to be reported | ASTM D4052 | |
| **P-xylene** | Wt% | Min 16 | ASTM D2306 | جهت فروش داخل از این تست استفاده می شود |
| **O-xylene** | Wt% | Min 16 | ASTM D2306 | جهت فروش داخل از این تست استفاده می شود |
| **Ethyl Benzene** | Wt% | max 18.5 | ASTM D2306 | جهت فروش داخل از این تست استفاده می شود |
| **M-xylene** | Wt% | max 49 | ASTM D2306 | جهت فروش داخل از این تست استفاده می شود |
| **Benzene** | Wt% | max 0.01 | ASTM D2306 | جهت فروش داخل از این تست استفاده می شود |
| **Toluene** | Wt% | max 0.5 | ASTM D2306 | جهت فروش داخل از این تست استفاده می شود |
| **C9 Aromatic** | Wt% | max 1.5 | ASTM D2306 | جهت فروش داخل از این تست استفاده می شود |
| **Non Aromatic** | Wt% | max 5 | ASTM D2306 | جهت فروش داخل از این تست استفاده می شود |
| **Bromin Index** | mgr/100 gr | max 20 | ASTM D1492 | |

| LIGHT END SPESIFICATION | | | |
|---|---|---|---|
| **TYPICAL TEST** | **UNIT** | **SPESIFICATION** | **TEST METHOD** |
| **PONA** | Wt% | | IFP 9301 |
| **P** | | 86-97 | |
| **O** | | 0-3 | |
| **N** | | 0.47-5.5 | |
| **A** | | 0-5 | |
| **OTHER** | | 0-0.02 | |
| **TOTAL sulfur** | ppm | MAX 500 | ASTM D 5453 |

**Total sulfur minimum 3000 ppm for TK-8102 A/B**

| **Composition Wt%** | P | O | N | A |
|---|---|---|---|---|
| **C3** | MAX 1 | - | - | - |
| **C4** | 2-18 | - | - | - |
| **C5** | 36-90 | MAX 1 | 1-4 | - |
| **C6** | 2-38 | MAX 0.5 | MAX 3.5 | MAX 5 |
| **C7** | MAX 1.2 | - | MAX 0.5 | - |

| Heavy Gasoline | | | |
|---|---|---|---|
| **TYPICAL TEST** | **UNIT** | **SPESIFICATION** | **TEST METHOD** |
| **Specific Gravity** | - | 0.75-0.8 | ASTM D 1298 |
| **poNA** | Wt% | | IFP 9420 |
| **P** | | 12 | |
| **O** | | 0 | |
| **N** | | 0 | |
| **A** | | 88 | |

paraffin break down is as follow : C11+:12%

Aromatics break down is as follow : C9 A:10-13% C10 A:75-78%

| C3+ SPECIFICATION | | |
|---|---|---|
| **component** | **design** | **actual** |
| **ethan** | 13% | 17.20% |
| **propylen** | 25% | 22.50% |
| **propane** | 2.40% | 3% |
| **1,3 butadine** | 30% | 29% |
| **C4** | 12.40% | 11.20% |
| **Gasoline** | 16.20% | 15.50% |

| HEAVY END SPESIFICATION | | | |
|---|---|---|---|
| **TYPICAL TEST** | **UNIT** | **SPESIFICATION** | **TEST METHOD** |
| **Distillation Range** | °C | | ASTM D-86 |
| **IBP** | | 160-180 | |
| **10%** | | 175-193 | |
| **30%** | | 187-209 | |
| **50%** | | 206-230 | |
| **90%** | | 286-330 | |
| **FBP** | | 333-370 | |
| **Total Recovery** | % | 96 | |
| **Total Sulfur** | ppm | 2000 Max. | ASTM D-5453 |
| **color** | - | 2 Max | ASTM D-1500 |
| **Flash point** | Centigrade | 59 Min. | ASTM D-93 |
| **Specific Gravity** | - | 0.77-0.83 | ASTM D-4052 |

| HEAVYAROMATIC SPESIFICATION | | | |
|---|---|---|---|
| **TYPICAL TEST** | **UNIT** | **SPESIFICATION** | **TEST METHOD** |
| **DENSITY @ 15.6 ° C** | Gr /cm3 | 0.8-0.95 | ASTM D-4052 |

| RAFFINATE SPESIFICATION | | | | |
|---|---|---|---|---|
| **TYPICAL TEST** | **UNIT** | **SPESIFICATION** | **TEST METHOD** | **توضیحات** |
| **RVP** | psia | Max 9.5 | ASTM D-323 | جهت فروش داخل از این تست استفاده می شود |
| **IBP** | °C | 32-52 | ASTM D-86 | |
| **10%** | | 53-63 | | |
| **50%** | | 64-78 | | |
| **90%** | | 87-100 | | |
| **FBP** | | 101-130 | | |
| **Total Recovery** | % | Min 97 | | |
| **Paraffins** | Wt% | Max 92 | IFP 9302 | |
| **Olefins** | Wt% | Max 5 | IFP 9302 | |
| **Naphthenics** | Wt% | 4.5-10 | IFP 9302 | |
| **Aromatics** | Wt% | Max 6 | IFP 9302 | |
| **DenSITY @ 15.6 ° C** | gr /cm3 | 0.65-0.7 | ASTM D4052 | |
| **Total Sulfur** | ppm | Max 5 | ASTM D-5453 | |
| **color** | - | 15 Max | ASTM D-1209 | |

| LPG SPESIFICATION | | | |
|---|---|---|---|
| **TYPICAL TEST** | **UNIT** | **SPESIFICATION** | **TEST METHOD** |
| **C6+** | Wt% | Max 2% | ISO 7941 |

# ۸ -مشخصات کیفی محصولات شرکت پتروشیمی پارس

a. ETHANE

b. PROPANE

c. BUTANE

d. C5+

e. SALES GAS

f. ETHYLBENZENE

g. STYRENE MONOMER

h. BENZENE

i. TOLUENE

j. STYRENE TAR

# Ethane Product

| COMPONENT | | SPECIFICATION | |
|---|---|---|---|
| **CO2** | max | 50 | wt ppm |
| **CH4** | max | 1 | wt% |
| **C2H6** | min | 98 | wt% |
| **C3H8 AND HEAVIER** | max | 1 | wt% |
| **TOTAL SULPHUR** | max | 10 | wt ppm |
| **H2O** | | sat. | wt% |
| **CONDITION** | | | |
| **Temperature** | max | 50 | °C |
| **Pressure** | min | 17 | bar a |
| **Phase** | | gaseous | |
| **density** | | 21 | kg/m3 |
| **FLOW RATE (guaranteed figure)** | | | |
| **Summer Case, 5.5 mol% C2H6 in feed** | | 207.4 | t/h |

Remark: the ethane product will have an ethane purity of minimum 98 wt% on dry basis.

| propane Product | | | |
|---|---|---|---|
| **COMPONENT** | | **SPECIFICATION** | |
| **C2H6 and lighter** | max | 1 | wt% |
| **C3H8** | min | 98 | wt% |
| **C4H10 and heavier** | max | 1 | wt% |
| **TOTAL SULPHUR** | max | 30 | wt ppm |
| **CONDITION** | | | |
| **Temperature** | | 2) | °C |
| **Pressure** | | 2) | bar a |
| **Phase** | | liquid | |
| **FLOW RATE upstream of Sulphur (guaranteed figure)** | | | |
| **Summer Case** | | 123.9 | t/h |
| Remark: the propane product will have an propane purity of minimum 98 wt% on dry basis. | | | |
| 2) Suitable for refrigerated storage at almost atmospheric pressure | | | |

| Butane Product | | | |
|---|---|---|---|
| **COMPONENT** | | **SPECIFICATION** | |
| **C3H8 and lighter** | max | 1 | wt% |
| **C4H10** | min | 98 | wt% |
| **C5H12 and heavier** | max | 1 | wt% |
| **TOTAL SULPHUR** | max | 30 | wt ppm |
| **CONDITION** | | | |
| **Temperature** | | 3) | °C |
| **Pressure** | | 3) | bar a |
| **Phase** | | liquid | |
| **FLOW RATE upstream of Sulphur (guaranteed figure)** | | | |
| **Summer Case** | | 71.8 | t/h |
| Remark: the butane product will have an butane purity of minimum 98 wt% on dry basis. | | | |
| 2) Suitable for refrigerated storage at almost atmospheric pressure | | | |

| C5+ Product | | | |
|---|---|---|---|
| **COMPONENT** | | **SPECIFICATION** | |
| **C4H10 and lighter** | max | 1-5 | wt% |
| **C5H12** | | 5-63 | wt% |
| **C6 and heavier** | | 36-85 | wt% |
| **TOTAL SULPHUR** | max | 530-1800 | wt ppm |
| **CONDITION** | | | |
| **Temperature** | | 50 | °C |
| **Pressure** | | 4) | bar a |
| **Phase** | | liquid | |
| **FLOW RATE (guaranteed figure)** | | | |
| **Summer Case** | | 10.9 | t/h |
| Remark: the C5+ product will have an butane Content of not more than 5 wt% | | | |
| 4) Storage pressure is approx 1.7 bara at 50 °C. injection pump discharge pressure is approx 70 bara | | | |

| SALES GAS | | | |
|---|---|---|---|
| **COMPONENT** | | **SPECIFICATION** | |
| **N2 5)** | | 3.7-4 | mol % |
| **CO2 5)** | | 0.5-0.7 | mol % |
| **CH4 5)** | | 94.7-95.5 | mol % |
| **C2H6 and heavier** | max | 0.60 | mol % |
| **TOTAL SULPHUR** | max | 15.00 | mol ppm |
| **CONDITION** | | | |
| **Temperature** | max | 40 | °C |
| **Pressure** | min | same presure as normal operating pressure of natural gas FEED at BL plus 6 bar | |
| **Phase** | | gaseous | |
| **FLOW RATE (guaranteed figure)** | | | |
| **Summer Case** | | 2032.2 to 2028.9 | t/h |
| Remark: the sulphur content at turndown may be higher due to limitations in sulfure treater cycle times and regeneration gas flow rates. | | | |
| 5)Concentrations vary depending on summer case and winter case Natural Gas FEED and are not subject to guarantee | | | |

| ETHYLBENZENE | | | |
|---|---|---|---|
| **COMPONENT** | **UNIT** | **SPECIFICATION** | **TEST METHOD** |
| **ethylbenzene** | % wt | > 99.7 | ASTM D 5060.95 |
| | | | ME 31023 |
| **non Aromatics** | ppm wt | < 500 | ASTM D 5060.95 |
| | | | ME 31023 |
| **benzene** | ppm wt | < 1500 | ASTM D 5060.95 |
| | | | ME 31023 |
| **toluene** | ppm wt | < 500 | ASTM D 5060.95 |
| | | | ME 31023 |
| **xylenes** | ppm wt | < 100 | ASTM D 5060.95 |
| | | | ME 31023 |
| **cumene** | ppm wt | < 200 | ASTM D 5060.95 |
| | | | ME 31023 |
| **buthylbenzene** | ppm wt | < 200 | ASTM D 5060.95 |
| | | | ME 31023 |
| **diethylbenzene** | ppm wt | < 10 | ASTM D 5060.95 |
| | | | ME 31023 |
| **other aromatics** | ppm wt | < 100 | ASTM D 5060.95 |
| | | | ME 31023 |
| **appearance** | | Color less | |
| | | | ME 11001 |
| **color (APHA)** | Mg Pt/l | < 15 | ASTM D 1209 |
| | | | ME 11003 |
| **water** | ppm wt | < 50 | ASTM D 890 |
| | | | ME 72001 |
| **chlorine (as $Cl^{-1}$)** | ppm wt | < 1 | ASTM D 4929 |
| | | | ME 64007 |
| **sulfur (as S)** | ppm wt | < 1 | ASTM D 3961 |
| | | | ME 64006 |

| STYRENE MONOMER | | | |
|---|---|---|---|
| **COMPONENT** | **UNIT** | **COMPOSITION** | **TEST METHOD** |
| **styrene monomer** | WT%,min | 99.85 | ASTM D 5135 |
| **polymers** | ppm wt, max | 10 | ASTM D 2121 |
| **colour** | APHA, max | 10 | ASTM D 1209 |
| **aldehydes ( as benzaldehyde)** | ppm wt, max | 50 | ASTM D 2119 |
| **inhibitor** | ppm wt | 15 | ASTM D 4590 |
| **peroxides (as H2O2)** | ppm wt, max | 30 | ASTM D 2340 |
| **TOTAL SULPHUR (as S)** | ppm wt, max | 1 | ASTM D 3120 |
| **total chlorides (as Cl)** | ppm wt, max | 1 | ASTM D 4929 |
| **C8 (EB +Xylenes)** | ppm wt, max | 600 | ASTM D 5135 |
| **phenyl acetylene)** | ppm wt, max | 180 | ASTM D 5135 |
| **C9 aromatics** | ppm wt, max | 800 | ASTM D 5135 |
| **within C9 Alphamethylstyrene** | ppm wt, max | 400 | |
| **CONDITION** | | | |
| | | **NORMAL** | **Mechanical Design** |
| **pressure at BL, bar g** | | 12 | to be confirmed |
| **Temperature at BL,°C** | | 15 | 100 |

| BENZENE | | |
|---|---|---|
| **COMPONENT** | **UNIT** | **COMPOSITION** |
| **BENZENE** | wt % min | 98 |
| **NON aromatics** | wt % min | 1.5 |
| **Toluene** | wt % min | 0.5 |
| **Ethylbenzene** | wt % min | 0.01 |
| **CONDITION** | | |
| | **NORMAL** | **Mechanical Design** |
| **pressure at BL, bar g** | 12 | to be confirmed |
| **Temperature at BL,°C** | 25 | 100 |

| TOLUENE | | |
|---|---|---|
| **COMPONENT** | **UNIT** | **COMPOSITION** |
| **Toluene** | wt % min | 98.8 |
| **NON aromatics** | wt % mix | 0.6 |
| **BENZENE** | wt % mix | 0.2 |
| **Ethylbenzene** | wt % mix | 0.4 |
| **CONDITION** | | |
| | **NORMAL** | **Mechanical Design** |
| **pressure at BL, bar g** | 12 | to be confirmed |
| **Temperature at BL,°C** | 25 | 100 |

| STYRENE TAR | | |
|---|---|---|
| **COMPONENT** | **UNIT** | **COMPOSITION** |
| **Toluene** | wt % TYPICAL | 35 |
| **NON aromatics** | wt % TYPICAL | 15 |
| **BENZENE** | wt % TYPICAL | 10 |
| **Ethylbenzene** | wt % TYPICAL | 40 |
| **CONDITION** | | |
| | **NORMAL** | **Mechanical Design** |
| **pressure at BL, bar g** | 2.5 | 7 |
| **Temperature at BL,°C** | 133 | 150 |

# HDPE 2200J( injection grade)

| Property | Test Method | Unit | Value |
|---|---|---|---|
| Melt flow rate | ISO 1133 | g/10 min. | 5.2 |
| Density | ISO 1183 | kg/m3 | 964 |
| Tensile Strength at yield | ISO 527-1, -2 | MPa | 28 |
| Tensile Strength at break | ISO 527-1, -2 | MPa | >17 |
| Elongation at Break | ISO 527-1, -2 | % | >500 |
| Charpy Impact strength | ISO 179-1 | kJ/m2 | 7.2 |
| Shore hardness | ISO 868 | D scale | 65 |
| Stress cracking resistance | ASTM 1693 | hr | 4 |
| Melting temperature | ISO 11357 | ºC | 135 |
| Vicat softening temperature | ISO 306 | ºC | 130 |

## APPLICATION

Excellent rigidity and impact strength, general purpose and industrial uses Vegetable containers, milk bottle crates, beverage crates, vegetable containers, fruit containers, casks for pickles, package for tablets, tool boxes, pellets shipping crates, bread trays, etc.

# HDPE 3000B(Blow molding grade)

| Property | Test Method | Unit | Value |
|---|---|---|---|
| Melt flow rate | ISO 1133 | g/10 min. | 0.63 |
| Density | ISO 1183 | kg/m3 | 961 |
| Tensile Strength at yield | ISO 527-1, -2 | MPa | 31 |
| Tensile Strength at break | ISO 527-1, -2 | MPa | >18 |
| Elongation at Break | ISO 527-1, -2 | % | >500 |
| Charpy Impact strength | ISO 179-1 | kJ/m2 | 5.5 |
| Shore hardness | ISO 868 | D scale | 65 |
| Stress cracking resistance | ASTM 1693 | hr | 24 |
| Melting temperature | ISO 11357 | ºC | 134 |
| Vicat softening temperature | ISO 306 | ºC | 128 |

## APPLICATION

Excellent rigidity and good processability Small-sized bottle, toys, milk bottles, bottles for food, packaging, waste packaging containers, fridge bottles

# HDPE 5200B(Blow molding grade)

| Property | Test Method | Unit | Value |
|---|---|---|---|
| Melt flow rate | ISO 1133 | g/10 min. | 0.32 |
| Density | ISO 1183 | kg/m3 | 960 |
| Tensile Strength at yield | ISO 527-1, -2 | MPa | 31 |
| Tensile Strength at break | ISO 527-1, -2 | MPa | >21 |
| Elongation at Break | ISO 527-1, -2 | % | >500 |
| Charpy Impact strength | ISO 179-1 | kJ/m2 | NB |
| Shore hardness | ISO 868 | D scale | 64 |
| Stress cracking resistance | ASTM 1693 | hr | 40 |
| Melting temperature | ISO 11357 | ºC | 134 |
| Vicat softening temperature | ISO 306 | ºC | 128 |

## APPLICATION

Excellent rigidity and impact strength Large containers and industrial uses Kerosene containers, chemical containers, food containers, automobile oil containers, large toys, milk bottles, bottles for pesticides, water packaging containers, water tanks, petrol cans, floats and etc.

# HDPE 5300B(Blow molding grade)

| Property | Test Method | Unit | Value |
|---|---|---|---|
| Melt flow rate | ISO 1133 | g/10 min. | 0.4 |
| Density | ISO 1183 | kg/m3 | 949 |
| Tensile Strength at yield | ISO 527-1, -2 | MPa | 24 |
| Tensile Strength at break | ISO 527-1, -2 | MPa | >14 |
| Elongation at Break | ISO 527-1, -2 | % | >500 |
| Charpy Impact strength | ISO 179-1 | kJ/m2 | 8.5 |
| Shore hardness | ISO 868 | D scale | 64 |
| Stress cracking resistance | ASTM 1693 | hr | >600 |
| Melting temperature | ISO 11357 | ºC | 130 |
| Vicat softening temperature | ISO 306 | ºC | 121 |

## APPLICATION

Good external appearance, excellent environmental stress cracking resistance Shampoo bottles, cosmetic bottles

# HDPE 6008B(Blow molding grade)

| Property | Test Method | Unit | Value |
|---|---|---|---|
| Melt flow rate | ISO 1133 | g/10 min. | 0.36 |
| Density | ISO 1183 | kg/m3 | 956 |
| Tensile Strength at yield | ISO 527-1, -2 | MPa | 26 |
| Tensile Strength at break | ISO 527-1, -2 | MPa | >17 |
| Elongation at Break | ISO 527-1, -2 | % | >500 |
| Charpy Impact strength | ISO 179-1 | kJ/m2 | 8.6 |
| Shore hardness | ISO 868 | D scale | 64 |
| Stress cracking resistance | ASTM 1693 | hr | 300 |
| Melting temperature | ISO 11357 | ºC | 132 |
| Vicat softening temperature | ISO 306 | ºC | 123 |

## APPLICATION

Different in stabilizer recipe from 6200BX Anti-static electricity Detergent bottles, cosmetic bottles

# MDPE 5100E(Extrusion grade)

| Property | Test Method | Unit | Value |
|---|---|---|---|
| Melt flow rate | ISO 1133 | g/10 min. | 0.24 |
| Density | ISO 1183 | kg/m3 | 944 |
| Tensile Strength at yield | ISO 527-1, -2 | MPa | 20 |
| Tensile Strength at break | ISO 527-1, -2 | MPa | >17 |
| Elongation at Break | ISO 527-1, -2 | % | >500 |
| Charpy Impact strength | ISO 179-1 | kJ/m2 | NB |
| Shore hardness | ISO 868 | D scale | 60 |
| Stress cracking resistance | ASTM 1693 | hr | >600 |
| Melting temperature | ISO 11357 | ºC | 127 |
| Vicat softening temperature | ISO 306 | ºC | 120 |

## APPLICATION

Characteristics and Uses: Excellent environmental stress cracking resistance and good processability
Steel pipe lining and submarine cables