



Shazand (Arak) Petrochemical Co.



In the name of god

Index :

2	About Shazand (Arak) Petrochemical Company
4	AA / VAM Acetic Acid / Vinyl Acetate Monomer
5	Oxo Alcohol 2 - Ethyl Hexanol /Normal Butanol/Iso Butanol
6	EA Ethanol Amines
7	EO / EG Ethylene Oxide/Ethylene Glycol
9	ETX (S) Ethoxylated Products
14	1,3 Butadiene / Butane - Butene Raffinate
15	C4 - cut/But-1 C4-cut/Butene-1
16	Olefine CFO/HPG/C6 CUT
17	PBR Poly Butadiene Rubber
21	PE Polyethylene
27	PP Polypropylene





About Shazand (Arak) Petrochemical Company

Shazand (Arak) Petrochemical Company has established as a Grass Root Complex for the production of different petrochemical products such as Plastics, Synthetic Rubber and other chemicals from Naphtha as feedstock. The total sellable annual production capacity of the Complex presently is 750,000 tons achieved in eighteen production plants to serve domestic market as well as being exported to the global market. The production of the Complex by adopting the advanced and modern technologies is tailored to meet the internationally acceptable application grades and purities both for polymer and chemical products, which are furnished in this brochure. Shazand Petrochemical Company is holding the **ISO 9001 - Version 2008**, **ISO 14001-2004** and **OHSAS 18001-2007** certificates.

Complex units:

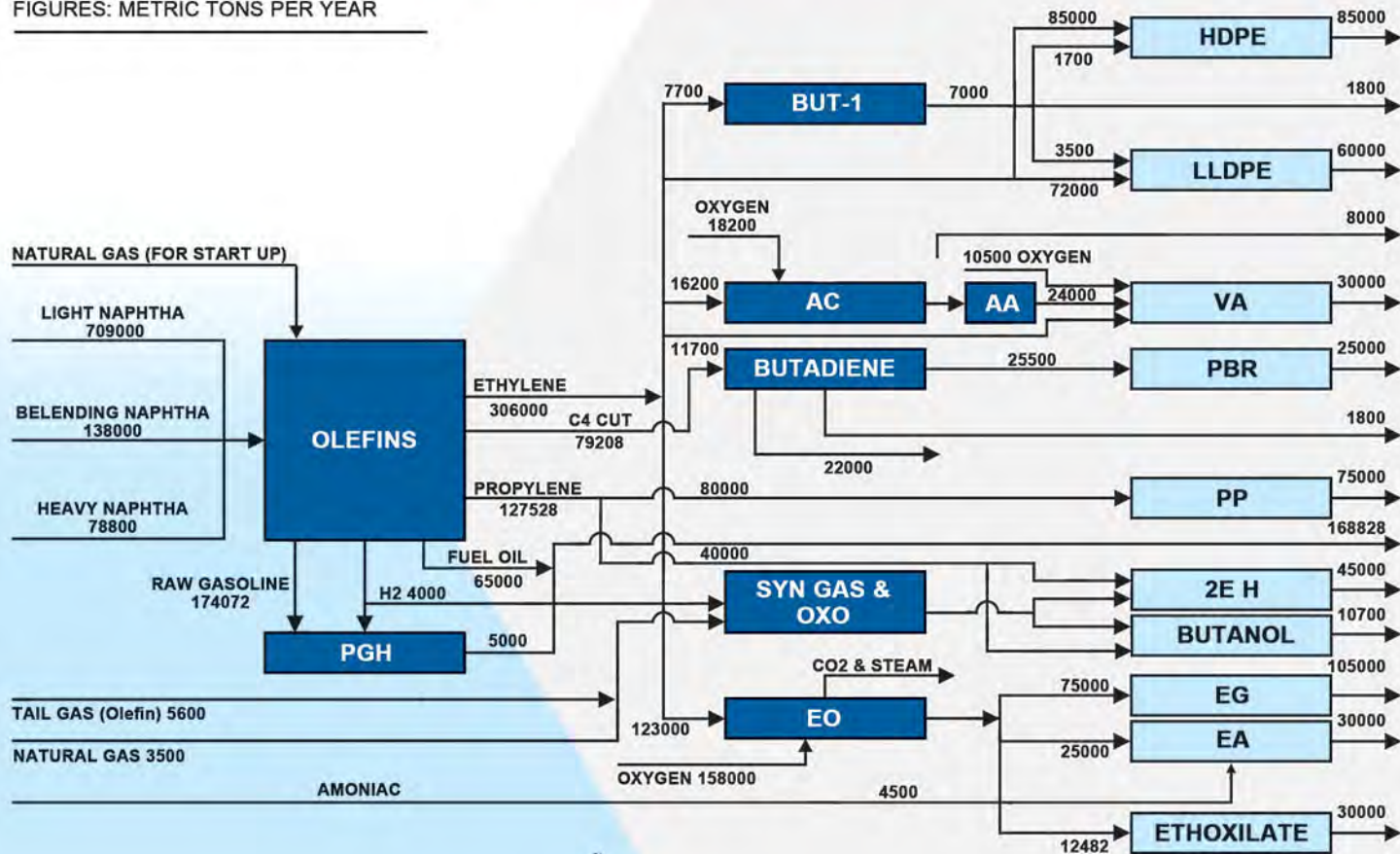
The production plants of the complex and their capacities after expansion are as follows :

Plants	Capacity
Ethylene	306400
Linear Low Density Polyethylene (LLDPE)	75000
High Density Polyethylene (HDPE)	85000
Polypropylene (PP)	75000
Poly Butadiene Rubber (PBR)	30000
Butene-1 (BUT-1)	7000
Acetic Acid (AA)	30000
Vinyl Acetate Monomer (VAM)	30000
Butane- Butene Raffinate (BBR)	25500
Hydrogenated Pyrolysis Gasoline (HPG)	169000
Ethylene Oxide (EO)	110000
Ethylene Glycol (EG)	105000
2-Ethyl Hexanol (2EH)	45000
Iso-Butanol	5000
Normal Butanol	5700
Ethanol Amines (EA)	30000
Ethoxylated Products (ETX)	30000



Block Diagram Of Process Unit

FIGURES: METRIC TONS PER YEAR





ACETIC ACID/VINYL ACETATE MONOMER

Vinyl Acetate Monomer (VAM)

Properties	Spec,Value	Unit	Test Method
Purity	99.9 MIN	WT%	UHDE-GCL2
Methyl acetate	100 MAX	PPM	UHDE-GCL2
Ethyl acetate	200 MAX	PPM	UHDE-GCL2
Acetaldehyde	100 MAX	PPM	UHDE-GCL2
Acidity as acetic acid	60 MAX	PPM	UHDE-VA-1
Water content	200 MAX	PPM	ASTM D-1364
Density@ 20C°	0.932-0.933	gr/CM3	ASTM D-4052
Color	5 MAX	APHA	ASTM D-1209
Hydroquinon	Cutomer Request (5-10)	PPM	ASTM D-1293

Application : Poly vinyl acetate, poly vinyl alcohol, poly vinyl butyral, poly vinyl ethylene, paints, adhesives, texties .

Acetic Acid (AA)

Properties	Spec,Value	Unit	Test Method
Purity	99.5 MIN	WT%	ASTM E 302
Water content	0.4 MAX	WT%	ASTM E 203
Formic acid	0.15 MAX	WT%	ASTM D 3546
Acetaldehyde	300 MAX	PPM WT%	UHDE GCL 3
Iron	1 MAX	PPM WT%	ASTM D 394
SP.GR.@20/20C°	1.0505-1.0525	----	ASTM D 4052
Color	10 MAX	APHA	ASTM D 1209

Application: Acetate cellulose, paint, solvent synthesis fiber, photography drug, curriery leather.





OXO ALCOHOLS

2-Ethyl Hexanol (2EH)

Properties	Spec,Value	Unit	Test Method
Purity	99.5 MIN	WT%	ASTM D 5008
Water	0.1 MAX	WT%	ASTM D 1364
Acidity as Acetic Acid	0.015 MAX	WT%	ASTM D 1613
Aldehydes as (EHA)	0.05 MAX	WT%	ASTM E 411
Sulphoric Acid Color	50 MAX	APHA	ASTM E 852
EMPOH*	0.4 MAX	WT%	ASTM D 5008
Color	10 MAX	APHA	ASTM D 1209
Odour	MILD	----	----
Unknown	----	WT%	ASTM D 5008

* 2-Ethyl, 4-Methyl, Pentanol

Application: Plasticizer for PVC & resins, defoaming agent, wetting agent, organic synthesis plasticizer, inks, rubber, paper, lubricant photography, paint.

Normal Butanol (NB)

Properties	Spec,Value	Unit	Test Method
Purity	99.5 MIN	WT%	ASTM D 5008
Color	10 MAX	APHA	ASTM D 1209
Water	0.1 MAX	WT%	ASTM D 1364
Aldehydes	0.05 MAX	WT%	ASTM E 411
Acidity as Acetic Acid	0.01 MAX	WT%	ASTM D 1613
Sulphoric Acid color	25 MAX	APHA	ASTM E 852
Unknown	----	WT%	ASTM D 5008

Application : organic synthesis solvent, laquers

Iso Butanol (IB)

Properties	Spec,Value	Unit	Test Method
Purity	99.5 MIN	WT%	ASTM D 5008
Color	10 MAX	APHA	ASTM D 1209
Water	0.2 MAX	WT%	ASTM D 1364
Aldehydes	0.1 MAX	WT%	ASTM E 411
Acidity as Acetic Acid	0.01 MAX	WT%	ASTM D 1613
Unknown	---	WT%	ASTM D 5008

Application: organic synthesis, latent solvent in paint & laquers, amino coating resins.



ETHANOL AMINE

Mono Ethanol Amine (MEA)

Properties	Spec,Value	Unit	Test Method
Purity	99.0 MIN	WT%	MA 503
SP.GR.@20/20C°	1.017-1.019	-	ASTM D 891
Water	0.2 MAX	WT%	ASTM D 1364
Equivalent MW	61- 62.5	-	MA 238
Color	f 10 MAX	Pt-Co	ASTM D 1209

* Packed in HDPE drum

Di Ethanol Amine (DEA)

Properties	Spec,Value	Unit	Test Method
Purity	98.5 MIN	WT%	MA 503
Color	15 MAX	Pt-Co	ASTM D 1209
Water	0.15 MAX	WT%	ASTM D 1364
MEA	0.6 MAX	WT%	MA 503
TEA	0.8 MAX	WT%	MA 503
SP.GR (20/20)C°	1.09 - 1094	-	ASTM D 891
Equivalent M.W	104 - 106	WT%	MA 238

Application: polyurethanes, anti corrosion ferrous, cement industries, textile industries, acid gas removal .

Tri Ethanol Amine 85% (TEA 85%)

Properties	Spec,Value	Unit	Test Method
Purity	85.0 MIN	WT%	MA 503
SP.GR.@ 20/20C°	1.122-1.130	-	ASTM D 891
Water	0.20 MAX	WT%	ASTM D 1364
MEA	0.50 MAX	WT%	MA 503
DEA	15 MAX	WT%	MA 503
Color	50 MAX	Pt-Co	ASTM D 1209

Tri Ethanol Amine 99% (TEA 99%)

Properties	Spec,Value	Unit	Test Method
Purity	99.0 MIN	WT%	MA 503
SP.GR.@ 20/20C°	1.122-1.127	-	ASTM D 891
Water	0.2 MAX	WT%	ASTM D 1364
Color	75 MAX	Pt-Co	ASTM D 1209

Application : material, polyurethanes, anti corrosion ferrous, cement industries, textile industries, acid gas removal.



ETHYLENE OXIDE/ETHYLENE GLYCOL

Ethylene Oxide (EO)*

Properties	Spec,Value	Unit	Test Method
Purity	99.9 MIN	WT%	MA - 773
Color	5 MAX	Pt-Co	DC - 139
Water Content	100 MAX	PPM	VC - 261A
Aldehydes as Acetaldehyde	30 MAX	PPM WT%	DC - 163/A
Acidity	20 MAX	PPM WT%	DC - 138
Residue	0.003 MAX	gr/100ML	DC - 133
Acetylene	---	PPM	S - 414 - C
Suspended Matter	---	WT%	DC - 139

*Not Exportable

Application : Glycols, Polyether, Polyols, Ethanol Amines, Ethoxilated Products.

Mono Ethylene Glycol (MEG)

Properties		Spec,Value	Unit	Test Method
Purity		99.8 MIN	WT%	ASTM E 202
Di Ethylene Glycol		0.08 MAX	WT%	ASTM E 202
Water Content		0.08 MAX	WT%	ASTM E 203
Acidity as Acetic Acid		10 MAX	PPM WT%	ASTM D 1613
ASH		0.005 MAX	gr/100ML	DC 254A
Chlorides as Chlorine Ion		0.1 MAX	PPM WT%	EO 635
Aldehydes as Acetaldehyde		10 MAX	PPM WT%	DC 163C
Iron		0.1 MAX	PPM WT%	ASTM E 202
Color		5 MAX	Pt-Co	ASTM D 1209
SP.GR.@20/20C°		1.1151-1,1156	---	ASTM D 891
(5-95 vol%)		1 MAX	C°	ASTM D 1078
Distillation@760mm Hg	IBP	196 MIN	C°	ASTM D 1078
	DP	199 MAX	C°	ASTM D 1078
UV Transmittance	@ 220 nm	70 MIN	T%	EO 577A
	@ 275 nm	95 MIN	T%	
	@ 350 nm	99 MIN	T%	

Application : PET, Polyester, Antifreeze, Solvent Dehydration Agent, Tile.



Di Ethylene Glycol (DEG)

Properties	Spec,Value	Unit	Test Method
Purity	99.8 MIN	WT%	ASTM E 202
Mono Ethylene Glycol	0.05 MAX	WT%	ASTM E 202
Tri Ethylene Glycol	0.05 MAX	WT%	ASTM E 202
Water Content	0.05 MAX	WT%	ASTM E 203
Acidity	0.005 MAX	WT%	ASTM D 1613
ASH	0.005 MAX	WT%	DC 254/A
SP.GR.@20/20C°	1.1175-1.1195	-	ASTM D 891
Color	10 MAX	Pt-Co	ASTM D 1209
Distillation @ 760mm Hg	IBP	242 MIN	ASTM D 1078
	DP	250 MAX	

Application: polyurethane textile softener, petroleum solvent, dehydration of natural gas, plasticizer, solvent for nitrocellulose.

Tri Ethylene Glycol (TEG)

Properties	Spec,Value	Unit	Test Method
Purity	97 MIN	WT%	ASwwTM E 202
DEG	2 MAX	WT%	ASTM E 202
TEG (T.TEG)	1 MAX	WT%	ASTM E 202
Water	0.05 MAX	WT%	ASTM E 203
Acidity	0.01 MAX	WT%	ASTM D 1613
ASH	0.005 MAX	WT%	DC 254/A
SP.GR.@20/20C°	1.124-1.126	-	ASTM D 891
Color	25 MAX	Pt-Co	ASTM D 891
Distillation @760mm Hg (5-95vol%)	280 MIN - 295 MAX	C°	ASTM D 1078

Application: polyurethane textile Softener, petroleum solvent, dehydration of natural Gas, plasticizer, solvent for nitrocellulose.





ETHOXYLATED PRODUCTS

Liquid Form of Poly Ethylene Glycol Grades

Properties	Unit	Test Method	PEG-200	PEG-300	PEG-400	PEG-600
Appearance (25C°)	---	VISUAL	Clear Liq.	Clear Liq.	Clear Liq.	White Paste
Color	APHA	ASTM D 1209	50 Max.	50 Max.	50 Max.	50 Max.
PH (5% In Water)	---	ASTM D 1172	5-7	5-7	5-7	5-7
Water Content	%Wt	Ballesteria BZ6	0.5 Max.	0.5 Max.	0.5 Max.	0.5 Max.
Hydroxyl Number	mgKOH/gr	ASTM D 4245	510-623	340-415	261-303	172-204
Viscosity (40C°)	cSt	ASTM D 445	21-25	31-35	40-45	60-66
Density (40C°)	kg/L	ASTM D 1298	1.10-1.11	1.10-1.11	1.10-1.12	1.10-1.12
M.W.	kg/kmol	Calculated	---	---	370-430	550-652





Solid Form of Poly Ethylene Glycol Grades

Properties	Unit	Test Method	PEG-1000	PEG-1500	PEG-2000	PEG-3000	PEG-3350	PEG-4000	PEG-6000	PEG-7000
Color	APHA	ASTM D 1209	50 Max. (APHA)	Slightly Haze	Slightly Haze	Slightly Haze	Slightly Haze	Slightly Haze	Slightly Haze	Slightly Haze
PH (5% In Water)	---	ASTM D 1172	5-7	4.5-7.5	4.5-7.5	5-7	4.5-7.5	4.5-7.5	4.5-7.5	5-7
Water Content	%Wt	Ballester BZ6	0.5 Max.	1.0 Max.	1.0 Max.	0.5 Max.	1.0 Max.	1.0 Max.	1.0 Max.	0.5 Max.
Hydroxyl Number	mgKOH/gr	ASTM D 4245	106 -119	70-80	53-59	25.5-29.5	30-38	25-32	16-22	17-22
Viscosity (40C°)	cSt	ASTM D 445	36-40	26-33	38-49	260-360	76-110	110-158	250-390	600-900
Density (40C°)	kg/L	ASTM D 1298	1.10-1.12	---	---	1.07-1.09	---	---	---	1.07-1.09
Freezing Point	C°	---	---	42-48	---	---	53-57	53-59	55-61	---
M.W.	kg/kmol	Calculated	---	---	1900-2100	---	3015-3685	3600-4400	5400-6600	---

Pharmaceutical Poly Ethylene Glycol Grades

Properties	Unit	Test Method	PEG-200	PEG-300	PEG-400	PEG-600	PEG-1000	PEG-1500	PEG-2000	PEG-3000
Color	APHA	ASTM D 1209	50 Max.	50 Max.	50 Max.	50 Max.	50 Max.	Slightly Haze	50 Max.	Slightly Haze
PH (5% In Water)	---	ASTM D 1172	4.5-7.5	4.5-7.5	4.5-7.5	4.5-7.5	4.5-7.5	4.5-7.5	4.5-7.5	4.5-7.5
Water Content	%Wt	Ballester BZ6	0.5 Max.	0.5 Max.	0.5 Max.	0.5 Max.	0.5 Max.	1.0 Max	1.0 Max	0.5 Max.
Hydroxyl Number	mgKOH/gr	ASTM D 4245	234-590	356-394	267-295	178-196	118-107	70-80	53-59	41.5-34
Density (40C°)	Kg/L	ASTM D 1298	1.10-1.11	1.10-1.11	1.10-1.11	1.10-1.11	1.10-1.11			1.10-1.11
Viscosity (98.9C°)	cSt	ASTM D 445	3.9-4.8	5.4-6.4	6.8-8	9.9-11.3	16-19	26-33	38-49	67-93
m.M.W.	Kg/Kmol	Calculated	190-210	282-315	380-420	570-630	950-1050	1350-1650	1900-2100	2700-3300
Formaldehyde	ppm	BP METHOD						15Max	15Max	
Residue On Ignition	wt%	USP	0.1 Max	0.1 Max	0.1 Max	0.1 Max	0.1 Max	0.1 Max	0.1 Max	0.1 Max
MEG & DEG	wt%	USP	<0.25 Max	<0.25 Max	<0.25 Max	<0.25 Max	<0.25 Max	<0.25 Max		<0.25 Max
1,4 Dioxane	ppm	USP	<10	<10	<10	<10	<10	10MAX	10MAX	<10
Ethylene Oxide	ppm	USP	<10	<10	<10	<10	<10	1Max.	1MAX	<10
Organic Volatile	ppm	USP 467	<10	<10	<10	<10	<10	<742	<742	<10
Acidity	ml NaOH(0.1M)	BP METHOD							0.1MAX	
Freezing Point	C°	BP 2.2.18							42-48	
Heavy Metal	ppm	USP 231	<5	<5	<5	<5	<5	5MAX	5MAX	<5



Properties	Unit	Test Method	PEG-3350	PEG-4000	PEG- 6000	PEG-7000	PEG-10000
Color	APHA	ASTM D 1209	Slightly Haze	Slightly Haze	Slightly Haze	50 Max	Slightly Haze
PH(5% In Water)	---	ASTM D 1172	4.5-7.5	4.5-7.5	4.5-7.5	4.5-7.5	4.5-7.5
Water Content	%Wt	Ballestera BZ6	1Max.	1Max.	1Max.	0.5 Max.	1Max.
Hydroxyl Number	mgKOH/gr	ASTM D 4245	30-38	25-32	16-22	18-14.6	10-12.5
Density (40C°)	Kg/L	ASTM D 1298				1.10-1.11	
Viscosity (98.9C°)	cSt	ASTM D 445	76-110	110-158	250-390	350-590	684-1384
m.M.W.	Kg/Kmol	Calculated	3015-3685	3600-4400	5400-6600	6300-7700	9000-1100
Formaldehyde	ppm	BP METHOD	15Max	15Max	15Max		15Max
Residue On Ignition	wt %	USP	0.1 Max	0.1 Max	0.1 Max	0.1 Max	0.1 Max
MEG & DEG	wt%	USP					<0.25 Max
1,4 Dioxane	ppm	USP	<10	<10	<10	<10	<10
Ethylene Oxide	ppm	USP	<1	<1	<1	<10	<1
Organic Volatile	ppm	USP 467	<742	<742	<742	<10	<742
Acidity	ml NaOH(0.1M)	BP METHOD			0.1MAX		0.1MAX
Freezing Point	C°	BP 2.2.18	53-57	53-59	55-61		55-61
Heavy Metal	ppm	USP 231	<5	<5	<5	<5	<5

Nonylphenol Ethoxylate (NPE)

Properties	Unit	Test Method	NPE-2EO	NPE-4EO	NPE-5EO	NPE-6EO	NPE-7EO	NPE-9EO
Appearance (25C°)	---	Visual	Clear Liq	Clear Liq	Clear Liq	Clear Liq	Clear Liq	Clear Liq
Cloud Point (1)	C°	Ballestera HA1	25-30	54-56	63-65	68-69	19-21	54-56
PH (5% in Water)	---	ASTM D 1172	5-7	5-7	5-7	5-7	5-7	5-7
Hydroxyl Number	mgKOH/gr	ASTM D 4252	180-190	140-150	127-132	115-120	97-107	89-93
Viscosity (25C°)	cSt	ASTM D 445	350-400	235-265	225-255	220-250	220-250	225 - 255
Density (25C°)	kg/L	ASTM D 1298	0.99 - 1.00	1.10- 1.03	1.03-1.04	1.03-1.04	1.03-1.06	1.05-1.06
HLB	---	Calculated	5.6 - 6.0	8.8-9.4	9.9-10.3	10.8-11.3	10.6-11.5	12.6-13.1



Properties	Unit	Test Method	NPE-10EO	NPE-12EO	NPE-15EO	NPE-20EO	NPE-45EO
Appearance (25C°)	---	Visual	Turb Liq.	Turb Liq.	Turb Liq.	Clear Liq.	Flakes
Cloud Point (1)	C°	Ballestera HA1	64-66	84-86	67-69	73-76	---
PH (5% in Water)	---	ASTM D 1172	5-7	5-7	5-7	5-7	5-7
Hydroxyl Number	mgKOH/gr	ASTM D 4252	85-89	75-79	62-65	49-52	23-27
Viscosity (25C°)	cSt	ASTM D 445	230-260	105-125	130-150	110-130	225-255
Density (25C°)	kg/L	ASTM D 1298	1.05-1.07	1.05-1.06	1.06-1.07	1.06-1.08	95-115
HLB	---	Calculated	13.3-14.0	141-14.9	14.6-15.3	15.4-16.3	16.2-19.1

(1) - 10% Solution in BDG at 25C°





Coconut Fatty Acid Ethoxylate

Properties	Unit	Test method	CFA- 8EO	CFA- 9EO	CFA- 10 EO
Appearance (25C°)	---	---	Yellowish-clear liquid	Yellowish-clear liquid	Yellowish-clear liquid
Cloud Point (1)	C°	Ballestera HA1	67- 60	63-70	67-73
PH (5% in Water)	---	ASTM D 1172	5-7	5-7	5-7
Water content	Wt%	Ballestra B-Z7	0.5	0.5	0.5
Saponification value	mgKOH/gr	ASTM D 1962	105-5	95-5	85-5
Molecular Weight	kg/Kmole	ASTM D 4252	510-561	561-623	623-701
Viscosity (25C°)	cSt	ASTM D 445	50-65	60-75	70-85
Density (25C°)	gr/L	ASTM D 1298	1.01-1.02	1.02-1.03	1.03-1.04
HLB	---	Calculated	12.5-13.8	12.7-14.1	12.6-14.1

(1) - 10% Solution in BDG at 25C°

Lauryl Alcohol Ethoxylate (LAE)

Properties	Unit	Test method	FAL-2EO	FAL-3EO	FAL-5EO	FAL-7EO	FAL-9EO
Color	APHA	ASTM D 1209	50 Max.	50 Max.	50 Max.	50 Max.	50 Max.
Cloud Point (1)	C°	Ballestra HA1	50-52	60-62	71-73	52-56	79-81
PH (5% in Water)	----	ASTM D 1172	5-7	5-7	5-7	5-7	5-7
Water Content	%Wt	Ballestra B-Z6	0.1 Max.	0.1 Max.	0.2 Max.	0.5 Max.	0.5 Max.
Hydroxyl Number	mgKOH/gr	ASTM D 4252	193-199	168-174	131-137	104-115	93-98
Molecular Weight	kg/Kmole	Calculated	282-291	322 - 334	410 - 428	488 - 540	572-603
Viscosity (50C°)	cSt	ASTM D 445	8-10	10-12	17-19	-	24-26
Density (25C°)	gr/L	ASTM D 1298	0.87-0.89	0.9-0.92	0.93-0.95	-	0.98-1.00
HLB	----	Calculated	5.9-6.2	7.9-8.2	10.3-10.7	12.1-12.5	13.1-13.8

(1) - 10% Solution in BDG at 25C°





BUTADIENE/BBR

1,3 Butadiene

Properties	Unit	Spec	Test Method
1,3 Butadiene	WT%	99.5 Min	AN-JG-No.1
(Trans+Cis)-2 Butene	WT%	0.5 Max	AN-JG-No.1
Total Acetylenes	PPM	50 Max	AN-JG-No.1
1,2-Butadiene	PPM	20 Max	AN-JG-No.1
TBC	PPM	50 Min	ASTM D 1157 - 84

Butane – Butene Raffinate (BBR)

Properties	Unit	Spec	Test Method
I-Butene	WT%	65 Min	ASTM D 2426
1-Butene	WT%	20 Max	ASTM D 2426
N & I Butane	WT%	4.96 Max	ASTM D 2426
C3 Cut	WT%	0.23 Max	ASTM D 2426
Trans-2-Butene	WT%	7.48 Max	ASTM D 2426
Cis-2-Butene	WT%	3.03 Max	ASTM D 2426
1,3 Butadiene	WT%	0.3 Max	ASTM D 2426





C4-CUT/BUT-1

C4-CUT

Properties	Unit	Spec	Test Method
1,3-Butadiene	WT%	47-53	AN-JG-No.1
1 & I-Butene	WT%	43 MAX	AN-JG-No.1
N & I-Butane	WT%	2.7 MAX	AN-JG-No.1
Methyl Acetylene	WT%	0.14 MAX	AN-JG-No.1
Ethyl Acetylene	WT%	0.55 MAX	AN-JG-No.1
Vinyl Acetylene	WT%	2.05 MAX	AN-JG-No.1
1,2-Butadiene	WT%	0.5 MAX	AN-JG-No.1
Trans- 2-Butene	WT%	3.5 MAX	AN-JG-No.1
Cis -2-Butene	WT%	4.5 MAX	AN-JG-NO.1
C-5	WT%	0.3 MAX	AN-JG-NO.1

Butene-1

Properties	Unit	Spec
Purity	WT%	99 Min
Carbon Monoxide	PPM VOL	1 Max
Carbon Dioxide	PPM VOL	2 Max
Ethane	PPM VOL	600 Max
Ethylene	PPM VOL	500 Max
Other Butenes or Butanes	PPM VOL	10000 Max
C6 (Not Cyclic)	PPM VOL	50 Max





OLEFINS

Cracked Fuel Oil (CFO)

Properties	Unit	Test Method	Value
Flash Point	C°	ASTM D 93	80 Min.
Viscosity@100 C°	Cst	ASTM D 88	3-15
Specific gravity@15C°	----	ASTM D 1298	1.01-1.06
ASH	ppm wt	ASTM D 482	150 Max.
Sulfur	%WT	ASTM D 5453	0.5 Max.
Carbon Content	%WT	ASTM D 5291	80 Min.

Hydrogenated Pyrolysis Gasoline (HPG)

Properties	Unit	Test Method	Value
Specific gravity@15C°	---	ASTM D 1298	0.78-0.84
Color Saybolt	---	ASTM D 156	+ 5 Min.
R.V.P	Psi	ASTM D 323	5-12
I.B.P	C°	ASTM D 86	34 Min.
F.B.P	C°	ASTM D 86	210 Max.
Aromatics	%WT	By GC	50 Min.
Total Sulfur	ppm wt	ASTM D 3120	300 Max.
Copper Corrosion	---	ASTM D 130	No. 1a
Lead Content	ppb	ATOMIC	5 Max.

C6 CUT Product

Properties	Unit	Test Method	Value
Benzen	%WT	By GC	80 Min.
DN Value	gl2/100g	UOP 326	2 Max.





POLY BUTADIENE RUBBER

High CIS 1,3-Polybutadiene Rubber (Grade 1220)

*Raw Material

Typical Properties	Test Method	Unit	Value
CIS Content	ZEON R-130A	WT%	MIN 97
Raw Mooney Viscosity	ASTM D-1646	ML- 4	41- 49
Volatile Material	ASTM D-1416	WT%	MAX 0.5
Ash Content	ASTM D-1416	WT%	MAX 0.3

**Compound Properties

Typical Properties	Test Method	Unit	Value
Compound Mooney Viscosity	ASTM D-1646	ML- 4	MAX 77
Tensile (35 min)	ASTM D- 412	Kgf/cm3	MIN 150
Elongation (35 min)	ASTM D- 412	%	MIN 440
300% Modulus at 145C0	ASTM D- 412	Kgf/cm3	---
25 min			68-108
35 min			74-114
50 min			74-114
Rheometer at 160 C°	ASTM D-3189	lbf in	32.0- 40.0
MH			
ML			
TS-1			
T50			
T90		MIN	6.0-10.4
		MIN	8.3-13.1

*Certified Properties

**Values shown are averages & are not to be considered as product specifications.





Compound Recipe

Typical Properties	Test Method	Unit	Value
Raw BR-1220	ASTM D-3189	PART	100
HAF Carbon (IRB No.6)		PART	60
Zinc Oxide		PART	3
Stearic Acid		PART	2
Accelerator (TBBS)		PART	0.9
Sulfur		PART	1.5
Highly Aromatic Oil		PART	15
Vulcanization Temperature		C°	145

Other Specifications

Typical Properties	Test Method	Unit	Value
Anti Oxidant	Non staining-high quality		
Catalyst Type	Cobalt		
Packaging	35 Kg bales, wrapped in 50 micron LDPE film & each 36 bales are in a box pallet		





Specification of chemicals used in the compound

High Cis1,3-Polybutadiene (Grade 1220)

Carbon Black HAF:	IRB No. conforming to NBS-SRM No. 378
Zinc Oxide (White Zinc):	NBS-SRM No. 370 JIS K-1410 No. 1
Stearic Acid:	NBS-SRM No. 372 Fractional fatty acid of JIS K-3341
Oil:	ASTM oil type 103 (sansen 4240 of Japan sun oil Co.)
Accelerator (TBBS):	U.S. monanto's santocure-NS conforming to NBS-SRM No. 384
Sulfur:	NBS-SRM No. 371, one type of JIS K-6222.325 MEAH product

Composition:

BR-1220 is a stereo specific high Cis-1, 3 polybutadiene. It is manufactured by a solution process using a cobalt catalyst which produces polymers with a low level of impurities. BR-1220 contains a non-staining high quality stabilizer system, too.

Applications:

BR - 1220 is used for the production of tire, footwear, belts, rubber hoses & other mechanical rubber products.

Storage:

BR-1220 should be stored in an adequately ventilated area where it will not be subjected to sunlight, extreme temperatures or sources of ignition.
Under the above-mentioned conditions BR-1220 should have a storage life of at least 6 months from the date of production.





BUTADIENE RUBBER

High CIS 1,3-Polybutadiene Rubber (Grade 1210s) Raw Material

Typical Properties	Test Method	Unit	Value
CIS Content	ZEON R-130A	WT%	MIN 97
Raw Mooney Viscosity	ZEON R-007B ASTM D-1646	ML- 4	35-45
Volatile Material	ZEON R-001B ASTM D-1416	WT%	MAX 0.5
Ash Content	ZEON R-130A ASTM D-1416	WT%	MAX 0.3
Solution Viscosity 5% in Styrene@ 25C°	RX-011A	Cps	50-70
Color Index 5% in Styrene	ASTM D-1209	APHA	MAX.30

Other Specifications

Typical Properties	
Gel content	Low
Antioxidants type	Non staining-High Quality-Food Grade
Catalyst type	Cobalt
Standard packaging	35 Kg Bales in Modified P.S. film & Each 36 Bales are in a Box Pallet
Storage life	12 month

Compostion:

BR-1210s is a stereo specific high CIS-1,4 polybutadiene. It is manufactured by a solution process using a cobalt catalyst which produces polymers with a very light colour & low level of impurities. BR-1210s contains a non-staining high quality stabilizer system which complies with compositional requirement of the food packaging regulation.

Applications:

BR -1210s used for the production of toughened polystyrene employing grafting porcesses.

Storage:

BR-1210s should be stored in an adequately ventilated area where it will not be subjected to sunlight,extreme temperatures or sources of ignition.
Under these conditions BR-1210s should have a storage life of at least 12 months from the date of production.



POLYETHYLENE

High Density Polyethylene (HDPE) Extrusion-PIPE (Basell license)

Grade Name	MFR (gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
AM 5010 T2 N (EX3)	0.45	0.945	PE-80 Pressure pipe, e.g. drinking water and gas pipes, waste pipes and sewer pipes, their fittings and also sheets (natural grade).
AM 5010 T2 B (EX3B)	0.45	0.954	PE-80 Pressure pipes, e.g. drinking water and gas pipes, waste pipes and sewer pipes, their fittings and also sheets (black grade)
AM 5010 T3 N	0.43	0.944	High quality PE-80 pressure pipe for gas and water transportation (natural grade).
AM 5010 T3 B	0.43	0.954	High quality PE-80 pressure pipe for gas and water transportation (black grade).
AM CRP 100 N (PE-100 W)	0.22	0.948	Top quality PE-100 pressure pipes for gas and water transportation at higher pressures or with thinner walls as PE-80 (natural grade).
AM CRP 100 B PE-100 B	0.22	0.957	Leading PE-100 for pressure pipes for all purposes for gas, water and sewage transportation (black grade).
AM CRP 100 Blue (PE-100 Blue)	0.22	0.948	Leading PE-100, specially for drinking water (blue marker)

Extrusion-Blow Molding (Basell license)

Grade Name	MFR (gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
AD 4760 (BL1)	6	0.957	Milk bottles and shakers for powder
AH 4765 (BL3 VD)	1.5	0.959	For hollow articles where high stress cracking resistance is not demanded, such as bottles and containers up to 10 liters, e.g. for fabric softeners.
AF 4760 (BL3)	1.2	0.954	Containers with capacities ranging from a few ml up to 10 also for thermoforming. Also for production of sheets for thermoforming.
AF 4750 (BL2)	1	0.946	For disinfectant bottles up to 2 liters. Tubes for cosmetics, containers up to 10 liters and petrol cans up to 5 liters.
AM 8255 (BL4)	0.28	0.953	General purpose grade for containers from 1L to 200L capacity .
AM 7746 (BL5)	0.24	0.944	Large containers above 10L capacity and for the production of semi finished stock.
AM 7255 (BL6)	0.11	0.952	Large containers above 5L capacity and for the production of semi-finished stock.



Extrusion-Tubular film (Basell license)

Grade Name	MFR(gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
AM 9450 F (EX5)	0.28	0.949	For blown films with paperlike quality, suitable for counter bags, carrier bags and wrapping films, excellent processing.
AM 9450 F1 (EX5 HS)	0.24	0.950	For blown films with paperlike quality, suitable for counter bags, carrier bags and wrapping films, excellent processing and sealability.
AM 9455 F (EX4)	0.28	0.956	For blown films with paperlike quality, suitable for counter bags, carrier bags and wrapping films, excellent processing stiffer than HM 9450 F.
AM 9455 F1(EX4 HS)	0.24	0.957	For blown films with paperlike quality, suitable for counter bags, carrier bags and wrapping films, excellent processing, stiffer than HM9450 F1.
AM 9445 HT (EX6 HT)	0.18	0.944	For blown films with paperlike quality, suitable for counter bags, carrier bags and wrapping film, excellent processing with high tenacity.

HDPE-Injection Molding (Basell license)

Grade Name	MFR(gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
AA 7260 (I1)	52	0.957	Light weight household and disposable articles
AB 6450 (I2)	28	0.950	Household articles less hard and less rigid than I1
AC 7260 (I3)	23	0.957	Transport and stacking crates, particular bottle crates
AD 7255 (I4)	11	0.954	Thick walled, highly stressed transport containers, e.g. refuse bin and fish crates, screw caps and cable clips.





HDPE-Injection Molding (Innovene license)

Grade Name	MFR(gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
HD 5120 EA	2.3	0.950	Heavy duty and High ESCR application.
HD 5740 UA	4	0.955	UV resistance for thick components such as large refuse bins and pallets, boxes and dust bins.
HD 5050 EA	4.5	0.950	Heavy duty, High ESCR applications such as screw stopper. Caps & closures.
HD 5050 UA	4.5	0.950	Large dust bins & pails. Pallet boxes. Products with high ESCR and UV resistance.
HD 6070 EA	7	0.958	General purpose grade for rigid items such as fish boxes, Crates and tote boxes.
HD 6070 UA	7	0.958	UV stabilized for rigid items such as fish boxes, Crates and toys.
HD 5211 EA	11	0.949	Thin component, such as houseware and toys.
HD 5211 UA	11	0.949	UV stabilized for thin component, such as houseware and toys .
HD 5813 EA	13	0.954	Components requiring high rigidity, houseware and crates.
HD 5813 UA	13	0.954	UV stabilized for components requiring high rigidity, houseware and crates.
HD 5218 EA	18	0.952	Thin components such as food container, houseware and toys.
HD 5620 EA	20	0.956	General purpose.
HD 5226 EA	26	0.953	Thin wall injection application, housewares, caps and closures.
HD 5150 EA	55	0.958	High flow applications, Houseware, Food packaging.





Extrusion-Stretched Film and tape (Basell license)

Grade Name	MFR(gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
AF 7740 F (EX 1)	1.6	0.944	Stretched films and tapes for production of high quality knitted and woven.
AF 7740 F2 (EX1S)	1.8	0.944	Tapes to be used for agricultural packaging and as protective cover .

Extrusion-Filment (Basell license)

Grade Name	MFR(gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
AF 7750 M2 (EX2 S)	3.3	0.956	Monofilament for fishing notes, geo textiles and civil engineering.

Extrusion-Filment (Innovene license)

Grade Name	MFR(gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
HD 5710 AA	0.9	0.957	Ropes, nets, knitted sacks, woven fabrics.

Extrusion - Cable Insulation (Basell license)

Grade Name	MFR(gr/10min) (5kg,190C°)	Density (gr/cm ³)	Application
AF 7450 K (EX 7C)	3.5	0.946	Wire and cable insulation





LINEAR LOW DENSITY POLYETHYLENE (LLDPE)

C4-LLDPE-Blown Film (Innovene license)

Grade Name	MFR(gr/10min) (2.16kg,190C°)	Density (gr/cm ³)	Application
LL 0205 AF	0.5	0.920	Produce bag, medium duty sacks, refuse sacks, agricultural film.
LL 0205 HF	0.5	0.920	Liner bag, medium duty sacks, refuse sacks, agricultural film.
LL 0209 AF	0.9	0.920	Sealing layer, lamination, carrier and industrial bags.
LL 0209 AA	0.9	0.920	Liner bags, builders reel, Co-extrusion, shrink silage, green house and mulch film.
LL 0209 KJ	0.9	0.920	Liner bags, deep freeze film, garment wrap, refuse and heavy duty sacks.
LL 1209 AA	0.9	0.920	Lamination film.
LL 1209 KJ	0.9	0.920	Lamination film, display packaging, co-extrusion.
LL 0410 AA	1	0.925	Thin film, shrink film. Blending component with PP.
LL 0410 KJ	1	0.925	Thin film, carrier bags, garment wrap.

C6-LLDPE-Blown Film (Innovene license)

Grade Name	MFR(gr/10min) (2.16kg,190C°)	Density (gr/cm ³)	Application
LL 6206 AF	0.6	0.920	Heavy duty sacks, agricultural film, mulch film.
LL 6206 LJ	0.6	0.921	Mulch film, mailing film.
LL 6209 KJ	0.9	0.921	Carrier bags, mailing film, refuse bag.
LL 6409 AA	0.9	0.924 L	Amination, sealing layers in co-extrusion.
LL 6409 KJ	0.9	0.925	Lamination, sealing layers in co-extrusion.

C4-LLDPE-Cast Film (Innovene license)

Grade Name	MFR(gr/10min) (2.16kg,190C°)	Density (gr/cm ³)	Application
LL 0220 AA	2.2	0.920	Stretch wrap, oriented tape. base resin for power cable compound insulation (low voltage), fiber optic jacketing.
LL 0640 AA	4	0.93	High quality cast films for display packaging, non cling layer for stretch film. base resin for power cable compound insulation (low voltage), fiber optic jacketing.
LL 0640 KJ	4	0.929	High quality cast films such as display packaging, non cling layer for stretch film.



C4-MDPE-Rotational Molding (Innovene license)

Grade Name	MFR(gr/10min) (2.16kg,190C°)	Density (gr/cm ³)	Application
HD 3840 UA	4	0.938	Tanks, containers and silos up to 30000 liters, technical parts, agricultural application.
HD 2840 UA	4	0.928	Tanks, containers and silos up to 30000 liters, technical parts, agricultural application.
HD 3560 UA	6	0.935	Tanks, containers and silos up to 30000 liters, technical parts, agricultural application.

LLDPE-Injection Molding (Innovene license)

Grade Name	MFR(gr/10min) (2.16kg,190C°)	Density (gr/cm ³)	Application
BD 24250 AA	25	0.926	Housewares, boxes and closures.
BD 30500 AA	50	0.930	Housewares, boxes and closures.





POLYPROPYLENE-HOMOPOLYMER

PP-Homopolymer-Fibre

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
F20S	11	Medium gas – fading resistance.	BCF and CF multifilament, mediumlow denier staple yarn, trilobe sections.
F39S	12	General purpose with high gas – fading resistance.	Wool staple fiber, heavy denier CF multifilament.
HP554N	12	Outstanding spin ability, superior thermo-bonded properties & excellent anti-gas fading properties	Fine denier staple fibers for non woven, thermo-bonded fabrics. Feminine care products, medical disposables and filters.
HP500N	12	Good processability & constant, high flow during extrusion.	Wool staple fiber, heavy denier CF, multifilament for ropes, belts & straps and decorative ribbons.
V30S	18	Good flow, medium MWD.	Fine denier staple fibres, thermobonded non-woven fabrics, upholstery and hygiene, diapers, incontinence pads, feminine care.
HP554P	18	Good flow, Medium MWD, Anti gas fading	Fine denier staple fibres, thermobonded non-woven fabrics, upholstery and hygiene, diapers, incontinence pads, feminine care.
HP552R	25	High flow, medium MWD.High stretch ratio and gives tough and resilient fibres and Anti gas fading.	Short & long spinning, low denier staple fiber, BCF and CF multifilament, low denier staple fibres for non-woven fabrics, medical -sanitary applications and wipes, carpet face yarns , backpacks, big bag handles and safety belts.
H30S	35	High flow, medium MWD.	Fine denier cotton staple fiber, high speed short spinning operations. Coating of woven PP film yarn fabrics and paper coating. Injection Moulding for household articles, toys and packaging.

PP-Homopolymer-Spun Bond

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
HP562R	25	Spun-bond grade with very narrow MWD and very high speed production.	Low denier CF for spun bonding, non woven fabrics, diapers, medical and sanitary tissues.
HOXP2004	35	High fluidity spunbond grade with very narrow MWD and anti-gas fading performance.	Low denier CF for spun bonding, non woven fabrics, diapers, medical and sanitary tissues. High output and high tenacity fibers.
HP565S	38	Very high flow spun bond grade with narrow MWD.	Fine denier non-woven such as Nonwoven fabrics for industrial and medical applications. Backing and lining for furniture and carpet industries.



PP-Homopolymer-Injection Molding

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
D50G	0.3	Excellent long – term heat ageing resistance, high mechanical properties.	Injection molding of wheels, fittings and high performance items are other application.
Q30G	0.7	Particular molding purpose.	Technical items such as caps & clothes-pins.
HP502H	1.8	High stiffness and good impact strength, excellent processability.	Appliance components, textile bobbins, wheels, fitting, closures, caps.
HP500J	3.2	High stiffness & fairly good impact strength with good processability.	Technical items such as parts for small appliances & automotive industry. House wares, caps, closures, small containers, toys. It is also used for compounding.
HP500L	6	Easy processing & high stiffness.	Household articles, small containers, crates, garden furniture, stadium seats, toys, caps, closures. Components for appliances & automotive industry.
HP500M	8	Easy processing & high stiffness.	Household articles, food containers, crates, garden furniture, toys, caps, closures. Components for appliances & automotive industry.
HP502N	12	Good flow, good dimensional stability & high stiffness.	Consumer goods such as food containers, vacuum flasks, flower pots, garden furniture & small appliances. in the medical sector. It can be used for 3-part syringes & a wide range of health care items.
HP500P	16	Good flow & easy mold filling & short cycle times and high stiffness.	Thin-walled articles with long flow path such as containers, boxes, caps, closures. Polymer base for compounding & masterbatches.
Z11G	25	Suitable for medical gamma rays sterilization.	Syringes and hospital articles
HP300R	26	Very good processability and high stiffness.	Thin-walled containers & general purpose packaging items, vacuum flasks, kitchen articles. Compounding & masterbatches.
HP648S	35	High melt flow homopolymer with a narrow molecular weight distribution and optimum antistatic properties.	Thin - walled items such as video cassette boxes smal appliances.





PP-Homopolymer-Extrusion Thermoforming & Blow Molding

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
D60P	0.3	Excellent long-term heat ageing and detergents resistance. High mechanical properties	Pressure pipes, extruded and cast sheet.
HP501D	0.7	Excellent processability with an outstanding mechanical properties balance.	Technical extrusion for strapping, sheet, profiles, nets and small diameter pipes such as refills for ball pens. Blow molding small and medium sized containers.
S60D	1.8	Excellent long-term heat stability with detergent resistance.	Extruded sheet, blow molded technical items (such as tanks).
HP500H	1.8	Excellent process ability with high stiffness.	Thermoforming such as drinking beakers, packaging for dairy products, nursery flower pots& trays for fruits, biscuits & chocolates .Film yarn, both with cast and tubular process, mono filaments, strapping, extruded nets, blow molded small containers.
HP640H	2	Very high stiffness, excellent contact clarity, high gloss and good antistatic & excellent organoleptic properties.	Hot fill applications and thermoforming vending cups, blister packs, pots for dairy products and trays for biscuits, chocolates, and fruits.
T31SE	3.2	High stiffness, excellent processability, good contact clarity and high gloss.	Sheet for thermoforming. Vending cups, packaging for dairy products, trays for biscuits, chocolates and fruits. Co-extruded multilayer sheet with high barrier properties to produce retortable containers.



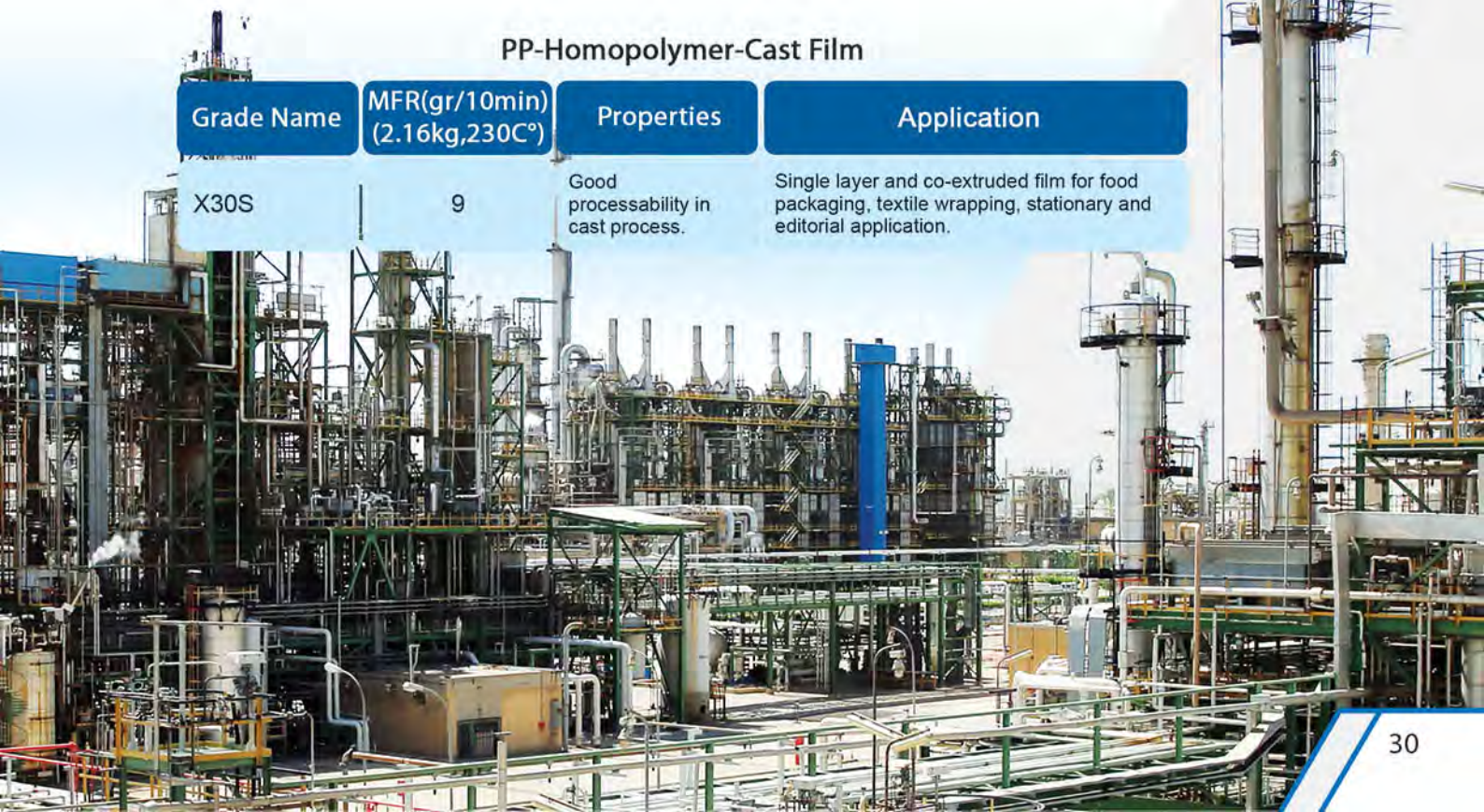


PP-Homopolymer-Film Yarn and Monofilament

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
S30SW	1.8	Excellent processability with high stiffness, low water carry over	Textile Film yarn, ropes, extruded nets.
S33LS	1.8	High mechanical properties and medium UV resistance.	Textile Film yarn, ropes, twins for agricultural use.
HP550J	3.2	Outstanding processability with good mechanical properties.	Film yarn, both with cast & tubular processes for the production of carpet backings, bags, industrial fabrics, mats & artificial grass, baler twines, packaging twines & ropes. Monofilament used for instance for brush & broom filling. Extrusion of nets for various purposes. Stiff sheet for high quality thermoforming such as vending cups, packaging for dairy products & trays for fruit, biscuits & chocolates.
HP510L	6	Outstanding processability with good mechanical properties.	Film yarn cast process for baler twines, packaging twines and ropes. Monofilament used in brush and broom filling and technical applications. Monolayer or co-extruded film for packaging. Thin sheet for stationary folders and sheets for thermoforming and extrusion of straws.

PP-Homopolymer-Cast Film

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
X30S	9	Good processability in cast process.	Single layer and co-extruded film for food packaging, textile wrapping, stationary and editorial application.





PP-Homopolymer-Bioriented Film

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
S28F	1.8	Excellent processability and low water carryover. High gloss & transparency. Good optical properties.	Film for packaging, special grade for metallization. Monolayer and co-extruded film. Also suitable for lamination to other flexible films.
S38F	1.8	High transparency and gloss. Very stable extrusion. Good mechanical properties.	Monolayer films are used for food packaging, textiles packaging and flower wrappings, double bubble lines, adhesive tapes. BOPP films are used for lamination to other flexible films.
S38FT	1.8	Excellent processability on tubular lines.	Adhesive tapes. Packaging in general.
T36F	2.5	Excellent processability on cast lines, high transparency and gloss.	Monolayer films are used for food packaging, textiles packaging and also for medical application.





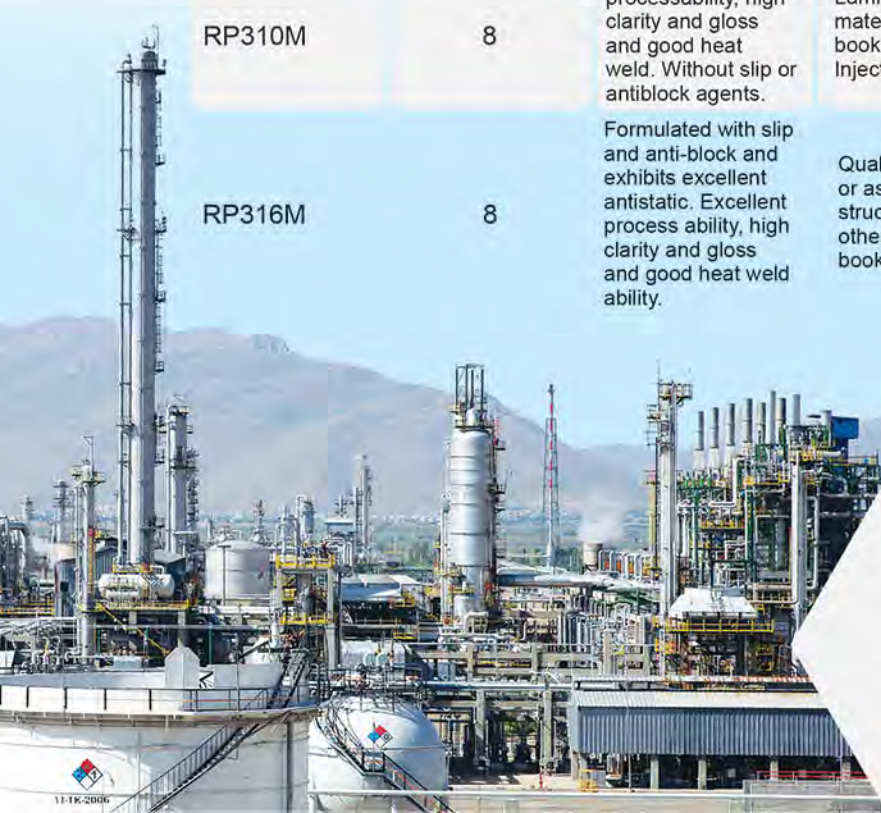
POLYPROPYLENE-RANDOM COPOLYMER

PP-Random Copolymer-Injection Molding

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
EP2X83CI	10	Excellent clarity and gloss.	Transparent housewares, food storage containers and packaging cosmetics and lids, caps and closures.
EP2YX29GA	10	Excellent flow and antistatic properties with very high transparency and gloss.	Containers and thin-walled packaging with high clarity for food, cosmetics and pharmaceutical products. It also can replace PS whilst adding low weight, low odour transfer, chemical resistance and impact strength.
RP340R	25	High melt flow and outstanding transparency and gloss.	Packaging for food and cosmetics, pharmaceutical products. Injection molded items for the medical sector such as syringes, test tubes and vials. Suitable for injection stretch blow molded containers and bottles.

PP-Random Copolymer-Cast and Blown Film

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
RP210M	6	Good processability, excellent clarity and gloss and very good heat weld ability.	Lamination to PP-film or other materials such as PA, polyester or aluminum. Packaging of foodstuffs and books, stationery, shirts and hosiery.
RP310M	8	Excellent processability, high clarity and gloss and good heat weld. Without slip or antiblock agents.	Lamination to BOPP film or other materials. Packaging of foodstuffs and books, stationery, shirts and hosiery. Injection molding caps and closures
RP316M	8	Formulated with slip and anti-block and exhibits excellent antistatic. Excellent process ability, high clarity and gloss and good heat weld ability.	Quality packaging as monolayer film or as welding layer on co-extruded structures. Lamination to BOPP film or other materials. Packaging of foodstuffs, books, stationery, shirts and hosiery.





PP-Random Copolymer-Bioriented Film

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
EP2S34F	1.8	Excellent processability on tubular lines, slip agent modified	Packaging of bread and other foodstuffs with heat-shrinkable film
RP129K	5	Low sealing temperature and, slip agent modified. very high transparency, excellent gloss and outstanding heat weld ability.	Suited for metallized BOPP films include packaging for foodstuffs and confectionary and medical applications drinks labels and liquor cartons.
EP3X37F	8	Low sealing temperature, slip and anti-blocking modified with very high transparency, excellent gloss and outstanding heat weld ability and show good hot tack.	Quality packaging for food, stationery, cosmetics, clothes and cigarettes. Suitable for the production of shrinkable co-extruded BOPP film for display packaging of foodstuff products.

PP-Random Copolymer-Extrusion

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
ARP230	0.2	High heat and extremely high extraction stability.	Sanitary pipes for cold & hot water, industrial and chemical pipes. Other applications are pipe fittings and profiles.
EP2X83CE	1.8	Excellent clarity and gloss.	Bottle for detergents and toiletries, flat mineral water, jars for condiments and preserves.
RP210G	1.8	High cracking and chemical resistance.	Film for packaging & sheet for stationery folders and displays. Extrusion blow molding of high gloss monolayer bottles, packaging of cosmetics, detergents, chemicals and food-stuffs.
RP240G	1.8	Low flow with a conventional MWD and is specially formulated with an additive package that enhances clarity.	Blow-molded articles, extruded sheet and profiles with good melt strength, excellent clarity, excellent gloss and good regrind stability.
RP270G	1.8	High transparency and gloss, excellent processability & can be converted on form-fill-seal equipments.	Blow molded medical articles. transparent bottles & containers for blood, intravenous solutions, pharmaceutical solutions, medicines & salves. Packaging for health care products. Film & sheet for thermoforming.



POLYPROPYLENE-HOMOPOLYMER

PP-High Impact Copolymer-Extrusion

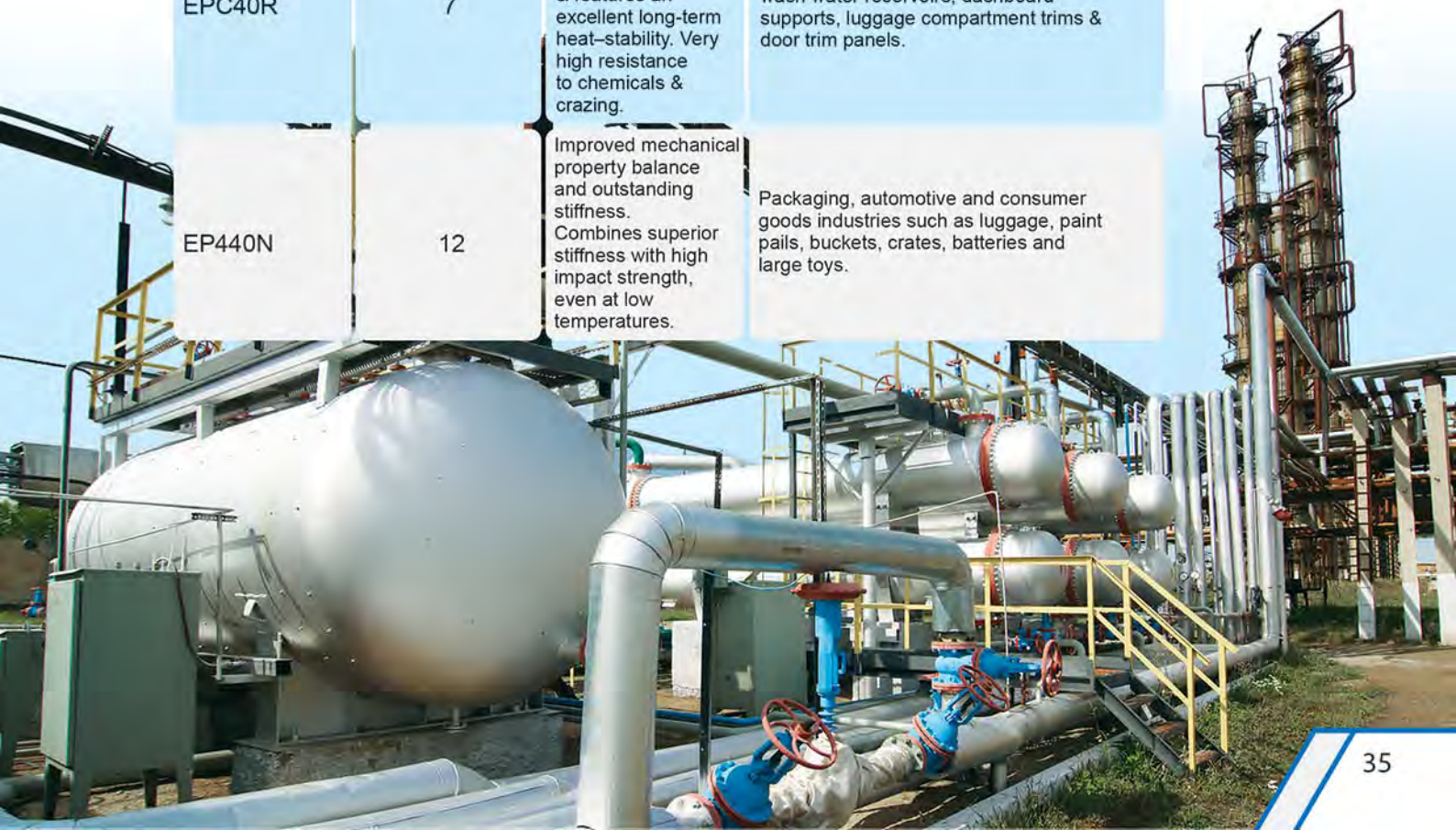
Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
EPD60R	0.35	Superior toughness even at low temperatures. Very high impact strength, extra heat stability and detergent resistance.	Blow molding for appliance components, wheels, under the hood automotive parts, toolboxes, suitcases and large containers. Profiles, sewage pipes and tough sheet for industrial applications. Thermoforming trays for cold storage.
EP310D	0.8	Smooth process ability and high mechanical properties. Good stiffness and very high impact strength, even at -20 C°.	Film for adhesive tapes and lamination to paper and other resins. Extrusion blow molded containers for detergents, toiletries and foodstuffs. Corrugated board, smooth and corrugated pipe and sheet for thermoforming. Injection molding items with very good mechanical properties balance.
EPYS30RE	1.3	Smooth process ability, good stiffness and outstanding impact resistance, even at -20 C°.	Corrugated board and sheet for thermoforming. Blow molded bottles and containers for detergents and foodstuffs and technical parts for the automotive and appliance industries.





PP-High Impact Copolymer-Injection

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
EPS30R	1.5	High impact strength, excellent processing characteristics.	Crates, paint fails, heavy duty packaging.
EP200K	3.5	Outstanding processability with extremely high impact resistance and very high toughness.	Furniture and suitcases, sport and bicycle parts. Boxes, containers, pallets, crates, pails and lids. Bitumen modification and compounding applications.
EP300K	3.5	Medium – high flow, excellent balance between flow, very high impact strength and good stiffness.	Medium sized containers, buckets, pails, crates for cold storage. Household articles. Small appliance, automotive and industrial application. Seats, chair shells, toys, suitcases. Thermoforming multilayer container for dairy products.
EP540L	6	Excellent balance of stiffness, impact strength (even at low temperatures) and process ability.	Crates, caps and thin-walled packaging for cold shelf presentation. Automotive & Appliance parts, wheels, furniture, chair shells and stadium seats. Cast film for stationery.
EPC40R	7	Excellent balance of mechanical properties & process ability & features an excellent long-term heat-stability. Very high resistance to chemicals & crazing.	Automotive components such as battery cases, brake fluid reservoirs, wash water reservoirs, dashboard supports, luggage compartment trims & door trim panels.
EP440N	12	Improved mechanical property balance and outstanding stiffness. Combines superior stiffness with high impact strength, even at low temperatures.	Packaging, automotive and consumer goods industries such as luggage, paint pails, buckets, crates, batteries and large toys.





PP-High Impact Copolymer-Injection

Grade Name	MFR(gr/10min) (2.16kg,230C°)	Properties	Application
EPF30R	13	Outstanding stiffness and high impact strength with high flow properties.	Packaging, automotive and consumer goods industries, household articles and closures.
EP548R	21	High stiffness, good impact resistance, high dimensional stability and excellent antistatic properties.	Thin-walled or long flow path articles such as flower pots, filters housings and appliance components.
EP740R	25	High stiffness, good impact resistance, high dimensional stability and excellent antistatic properties.	Thin-walled or long flow path articles such as flower pots, filters housings and appliance components.
EPH31RA	40	High stiffness, good impact resistance, outstanding organoleptic properties and excellent antistatic properties.	Thin-walled packaging such as margarine tubs and pots for mayonnaise and dairy or fatty products. Caps, closures and flower pots, appliance components, and cool boxes.
EP548S	45	Nucleated with anti-static agent. Outstanding balance of mechanical properties and high fluidity.	Extensively used in house wares and in thin-walled containers for food packaging (e.g. margarine tubs, yoghurt pots, etc.).
EP348U	70	Very high melt flow rate. Excellent impact resistance, even at low temperatures and effective antistatic. Low shrinkage and minimal wrapage.	Packaging for margarine tubs, pots for dairy products, ice-cream containers, trays, video cassette envelopes, caps and closures, Lunch-boxes, cool boxes, laundry baskets, and flower pots.
EP648V	100	Ultra high fluidity. Good stiffness/ impact balance, good dimensional stability and outstanding antistatic properties.	Packaging, house wares and garden furniture. Items with long flow paths such as laundry bins, drawer trays, video boxes, margarine tubs and packaging for dairy products.



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