



KOREA PETROCHEMICAL IND CO LTD
 UL COORDINATOR-ENGINEERING SEC
 YONSEI BONGRAE BLDG 48-3
 1-GA BONGRAE-DONG
 CHUNG-GU
 SEOUL KOREA

Your most recent listing is shown below. Please review this information and report any inaccuracies to the UL Engineering staff member who handled your project.

For information on placing an order for UL Listing Cards in a 3 x 5 inch format, please refer to the enclosed ordering information.

QMFZ2
 Plastics - Component

December 5, 2000

KOREA PETROCHEMICAL IND CO LTD
 YONSEI BONGRAE BLDG 48-3 1-GA BONGRAE-DONG
 CHUNG-GU, SEOUL KOREA

E93311

Material Dsg	Color	Min. Thk mm	Flame Class	H W I	H A I	Elec	R T I Imp	Mech Str	H V T R	D 4 9 5	C T I
Polypropylene (PP), furnished as pellets.											
2014	NC	0.75	V-2	4	1	65	65	65	—	—	—
		1.5	V-0	3	1	65	65	65	—	—	—
		3.0	V-0	2	0	65	65	65	0	6	0
2057	NC	0.75	V-2	4	1	65	65	65	—	—	—
		1.5	V-2	3	0	65	65	65	—	—	—
		3.0	V-2	2	0	65	65	65	0	5	0
2614	NC	0.75	V-0	3	1	65	65	65	—	—	—
		1.5	V-0	3	1	65	65	65	—	—	—
		3.0	V-0	2	0	65	65	65	0	6	0
2918	NC	0.75	V-2	4	1	65	65	65	—	—	—
		1.5	V-2	3	0	65	65	65	—	—	—
		3.0	V-2	2	0	65	65	65	0	6	0
2958	NC	0.75	V-2	4	1	65	65	65	—	—	—
		1.5	V-2	3	0	65	65	65	—	—	—
		3.0	V-2	2	0	65	65	65	0	5	0
3012	NC	1.5	HB	—	—	65	65	65	—	—	—
3713	NC	1.5	HB	—	—	65	65	65	—	—	—
4017	NC	0.75	HB	4	1	65	65	65	—	—	—
		1.5	HB	4	1	65	65	65	—	—	—
		3.0	HB	2	1	65	65	65	0	5	0
CB5108	RD	0.75	HB	—	—	65	65	65	—	—	—
	ALL	1.5	HB	—	—	65	65	65	—	—	—
CB5108H	RD	0.90	HB	4	1	120	115	120	—	—	—
	ALL	1.5	HB	4	1	125	125	125	—	—	—
	ALL	3.0	HB	3	0	125	130	130	0	4	1
CB5120	NC, WT, RD	0.87	HB	—	—	65	65	65	—	—	—

Material Dsg	Color	Min.	Flame Class	H	H	Elec	R T I		H	D	C
		Thk		W	A		Mech		V	4	
		mm		I	I		Imp	Str	T	9	
									R	5	I
CB5230	ALL	1.5	HB	—	—	65	65	65	—	—	—
	NC, WT, RD	0.87	HB	—	—	65	65	65	—	—	—
	ALL	1.5	HB	—	—	65	65	65	—	—	—
CB5290	ALL	0.75	HB	—	—	65	65	65	—	—	—
CB5330	NC, WT, RD	0.87	HB	—	—	65	65	65	—	—	—
CB5350	ALL	1.5	HB	—	—	65	65	65	—	—	—
	NC, WT, RD	0.87	HB	—	—	65	65	65	—	—	—
	ALL	1.5	HB	—	—	65	65	65	—	—	—
CB5360	ALL	0.75	HB	—	—	65	65	65	—	—	—
HJ4006	ALL	1.5	HB	—	—	65	65	65	—	—	—
HJ4012	RD	0.75	HB	3	0	65	65	65	—	—	—
	ALL	1.5	HB	3	0	65	65	65	—	—	—
		3.0	HB	2	0	65	65	65	0	5	0
HJ4112	RD	0.75	HB	3	1	65	65	65	—	—	—
	ALL	1.5	HB	3	0	65	65	65	—	—	—
		3.0	HB	1	0	65	65	65	0	5	0
SB9108	ALL	1.5	HB	—	—	65	65	65	—	—	—
SB9140	ALL	0.88	HB	—	—	65	65	65	—	—	—
SB9230	ALL	1.5	HB	—	—	65	65	65	—	—	—
SB9250	ALL	0.89	HB	—	—	65	65	65	—	—	—
SB9508	NC, RD, BK	0.89	HB	—	—	65	65	65	—	—	—
	ALL	1.5	HB	—	—	65	65	65	—	—	—

Marking: Company name and material designation on container, wrapper or finished part.

See General Information Preceding These Recognitions

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL94 small-scale test data is intended solely for determining the flammability of plastics materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

P. 2

Melville - March 28, 2002

AIR MAIL

Korea Petrochemical Ind Co Ltd
c/o Phil Engineering Service
Mr. Dong Phil Kang
Poong Lim Apt. 203/205
151-10, Hyung Kok-Dong, Gumi-City
Kyung-Buk, 730-040, KOREA

Our Reference: 01ME07027, E93311, QMFZ2, UA/3016P.

Subject: Component - Plastics HJ4012 and SB9108H.

We have completed our evaluation of the most recent long term heat aging data obtained on the subject materials. The ratings indicated on the table below can assigned to the products.

Material Designation	Color	Min. thk mm	Elec	R.T.L. °C	
				w/ Imp	Mech w/o Imp
HJ4012	RD	0.75	120	125	125
	ALL	1.5	120	125	125
		3.0	120	125	125
SB9108H	NC	0.75	120	125	125
	ALL	1.5	120	125	120
		3.0	120	125	125

We are currently publishing all test data and ratings.

If we can be of any further assistance feel free to contact us.

Very Truly Yours,

Reviewed By:

Bianca Angeli

Steve Giannoni

U. BIANCA ANGELI (Ext 22300)
Senior Engineering Associate
Conformity Assessment Services

STEVE GIANNONI (Ext.22330)
Senior Staff Engineer
Conformity Assessment Services

Post-It® Fax Note	7671	Date	3-28-01	# of pages	1
To	Dong Pil Kang	From	Bianca Angeli		
Co./Dept	Phil Engrg. Service	Co.	UL		
Phone #		Phone #			
Fax #	82-54-455-6968	Fax #	631-439-6046		

INDEX

Material Designation	Report Date
USR Material Designation	
2014, 2057, 2614, 2918, 2958, 3012, 4017, 4017(X)	1984-12-11
3713	1987-05-22
CNR Material Designation	
USR & CNR Material Designation	
CB5108, CB5108H, CB5120, CB5230, CB5290, CB5330, CB5350, CB5360, HJ4006, HJ4012, HJ4112	1999-07-21
SB9108, SB9140, SB9230, SB9250, SB9508	2000-10-04
SB9108H	2001-05-16

COMPONENT - PLASTICS (QMFZ2, QMFZ3)

INDEX TO FOOTNOTES:

(X) - May be followed by optional suffix letter from A-Z incl.

*

DESCRIPTION

PRODUCT COVERED:

Component - Plastics; Polypropylene (PP)

MATERIAL DESIGNATION: 4017, 2014, 2918, 2057, 2958, 3012, 2614, and 4017(X).

Note: (X) - May be followed by optional suffix letter from A-Z incl.

GENERAL DESCRIPTION OF MATERIAL:

Grade 2014 is a flame-retardant, high molecular weight homopolymer polypropylene, with an antioxidant additive.

Grade 2057 is similar to Grade 2014 except it has less flame-retardant and is lower in molecular weight.

Grade 4017 is a general purpose homopolymer polypropylene with an antioxidant and a lubricant additive.

Grades 2918 and 2958 are copolymer polypropylene materials, low molecular weight with antioxidant and lubricant additives and are similar to each other except that Grade 2958 has less flame retardant than Grade 2918.

Grades 3012 and 2614 are general purpose polypropylene materials.

Grade 4017(X) is an alternate grade of 4017.

MATERIAL MODIFICATIONS - There shall be no changes in the formulation or composition of the material unless previously cleared through Underwriters Laboratories Inc.

FORM OF SHIPMENT - The materials are produced and shipped in the form of pellets.

COLOR (NOT FOR UL REPRESENTATIVE USE):

The materials covered by this report are produced only unpigmented in the natural color.

*

ENGINEERING CONSIDERATIONS (NOT FOR UL REPRESENTATIVE USE):

USE - For use only in products where the acceptability of the combination is determined by Underwriters Laboratories Inc.

CONDITIONS OF ACCEPTABILITY - The following are among the considerations to be made in judging the use of this material in an end-use product.

1. The material is identified in the accordance with the marking requirements outlined in UL 94 and it can be determined that the part is made from the material specified (the part is molded by a Recognized Fabricated Part 'QMMY2' Manufacturer).
2. The materials have been evaluated for flammability in accordance with UL 94, IEC 60695, and CAN/CSA-C22.2 No. 0.17. UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94, IEC 60695, and CAN/CSA-C22.2 No. 0.17 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances. Refer to Table I and II for flammability classification. The flammability classification with consideration to color and thickness should comply with the flammability level acceptable for the applicable UL end-product standard or requirements outlined in the Standard for Polymeric Materials - use in Electrical Equipment Evaluations, UL 746C.
3. The engineer must consider the need to investigate the part for other than the properties investigated, in accordance with the applicable UL end-product standard and/or the requirements outlined in the Standard for Polymeric Materials - use in Electrical Equipment Evaluations, UL 746C.
4. Unless otherwise noted in the material footnote, suitability for use when exposed to ultraviolet light, water, oils, soaps, chemicals, X-rays, and the like has not been determined by this investigation.
5. The Follow-Up Services Procedure for a device employing parts molded of this material should specify these parts to have wall thickness, color and material identification and traceability in compliance with the above.

*

TABLE I
MATERIAL PROPERTIES

Material Designation	Color	R.T.I. °C										H Dielectric		Vol		H		Izod		Flex		G		Specific Gravity
		Min.	UL94	Elec		Mech		H	H	V	4	C	V	Str+	Res	Dim	H ₂ O	D	Ten	Ten	Str	W	W	
		thk	Flame		with	w/o	W	A	T	9	T	A	Kv/	ohm-	Stab	Abs.	T	Imp	Str	Imp	Str	I	F	
		mm	Class		Imp	Imp	I	I	R	5	I	R	mm	cm	%	%	°C	kJ/m ²	MPa	J/M	MPa	°C	°C	
4017, 4017(X)	NC	0.75	HB	65	65	65	4	1	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-
		1.5	HB	65	65	65	4	1	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	HB	65	65	65	2	1	0	5	0	2	28	15	-	0.29	92	121	366	-	-	-	-	1.007
2014	NC	0.75	V-2	65	65	65	4	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
		1.5	V-0	65	65	65	3	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	V-0	65	65	65	2	0	0	6	0	1	26	15	-	0.24	101	96	36	-	-	-	-	1.017
2057	NC	0.75	V-2	65	65	65	4	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
		1.5	V-2	65	65	65	3	0	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	V-2	65	65	65	2	0	0	5	0	0	28	15	-	-0.25	111	100	37	-	-	-	-	0.937
2958	NC	0.75	V-2	65	65	65	4	1	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-
		1.5	V-2	65	65	65	3	0	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	V-2	65	65	65	2	0	0	5	0	0	31	15	-	-0.24	100	91	32	-	-	-	-	0.940
2918	NC	0.75	V-2	65	65	65	4	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
		1.5	V-2	65	65	65	3	0	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	V-2	65	65	65	2	0	0	6	0	1	30	15	-	-0.20	172	99	97	-	-	-	-	0.875
3012	NC	1.57	HB	65	65	65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2614	NC	0.75	V-0	65	65	65	3	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
		1.5	V-0	65	65	65	3	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
		3.0	V-0	65	65	65	2	0	0	6	0	2	29	14	0	0	119	28	32	-	-	-	-	-

File E93311

Vol. 1

Sec. 1
and Report

Page 4

Issued: 1984-12-11
Revised: 2006-07-12

This page replaces page 4.

*

File E93311

Vol. 1

Sec. 1
and Report

Page 5

Issued: 1984-12-11
Revised: 2006-07-12

This page replaces page 5.

*

File E93311

Vol. 1

Sec. 1
and Report

Page 6

Issued: 1984-12-11
Revised: 2006-07-12

This page replaces page 6.

*

*

TABLE II
CANADIAN MATERIAL PROPERTIES

Material Designation	Color	Min. thk mm	Flame Class	HWI	HAI	HVA	C T I
4017, 4017(X)	NC	0.75	HB	14	69	300+	-
		1.5	HB	30	86	300+	-
		3.0	HB	37	115	199	600+
2014	NC	0.75	V-2	11	72	118	-
		1.5	V-0	27	109	238	-
		3.0	V-0	39	200+	261	600+
2057	NC	0.75	V-2	13	85	238	-
		1.5	V-2	16	200+	300+	-
		3.0	V-2	32	198	300+	600+
2958	NC	0.75	V-2	12	92	300+	-
		1.5	V-2	22	185	300+	-
		3.0	V-2	30	200+	300+	600+
2918	NC	0.75	V-2	13	81	231	-
		1.5	V-2	21	127	261	-
		3.0	V-2	33	200+	265	600+
3012	NC	1.57	HB	-	-	-	-
2614	NC	0.75	V-0	16	70	49	-
		1.5	V-0	17	71	89	-
		3.0	V-0	32	200+	93	600+

TEST RECORD NO. 3

GENERAL:

No testing was considered necessary to add Grade 4017(X) as an alternate grade designation for the Recognized Grade 4017. See Procedure E93311, Volume 1, Section 1, Report dated 1984-12-11.

Note: (X) - May be followed by optional suffix letter from A-Z incl.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in Standard for Test for Flammability of Plastic Materials for Parts in Devices and Appliances, UL 94, Fifth Edition, dated June 2, 2006 and Standard for Polymeric Materials - Short Term Property Evaluations, UL 746A, Fifth Edition, dated November 01, 2000 and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Test Record by:
YOUNGSUN KIM
Associate Project Engineer

Reviewed by:
JEONGJA KIM
Project Engineer

Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc.