From: Burrill, Dan
Sent: 08/24/2011 07:41:39 AM
To: Smith, Charles; Cuddy, Christopher; Ciulla, Ron
Subject: Marlex Equivalency Testing
Attachments: Channel Prime Alliance Lot CofA.pdf; Marlex HGX-030-01 MSDS.pdf; Marlex HGX-030-01 Equivalency Testing.doc; Marlex HGX-030-01 Technical Data Sheet.pdf

I have drafted a technical report that outlines the proposed testing that has been discussed in various emails and meetings. Please review and provide me any feedback you may have. I will wait to hear from you before putting document into PDM for approval.

Thanks,
Dan

Document Title:	Marlex® HGX-030-01 Equivalency Testing
Document Number:	*TBD*
Project Name:	Uro/Gyn Sustaining
Project Number:	U0311
Author(s):	Daniel Burrill

TABLE OF CONTENTS

1. Executive Summary:

An initial lot of Phillips Sumika Marlex® HGX-030-01 Polypropylene Homopolymer was obtained from the material distributor Channel Prime Alliance in Charlotte NC. A Certificate of Analysis (CoA) was supplied for this lot of Marlex® HGX-030-01 (refer to attachment 1). A second lot of material has been obtained from the material distributor Emai Plastic Raw Material (Dongguan) Inc. While the material has been supplied in the correct Phillips Sumika bags with an identifiable lot number, no CoA was supplied with this lot, and distributor is not able to reproduce CoA. Therefore this document will outline activities that BSC will be conducted to ensure the Marlex® HGX-030-01 received from Emai Plastic Raw Material is equivalent to the Marlex received from Channel Prime Alliance. Upon completion of these activities this report will be revised to document all testing, analysis and conclusions.

2. Objective

The purpose of this work is to establish equivalency of two Phillips Sumika Marlex® HGX-030-01 Polypropylene Homopolymer lots obtained from two different material distributors.

3. Applicable Documents

Document Description	Document Number	Document Version (when applicable)
Procedure to evaluate equivalency of polymers for shelf life	90559224	AA

4. Materials / Traceability

Two lots of Phillips Sumika Marlex® HGX-030-01 Polypropylene Homopolymer will be tested as part of this work.

Lot No. (Phillips Sumika)	**Product Description**
2951877	Existing Qualified lot of HGX030-01 obtained from Channel Prime Alliance
6120105	New lot of HGX030-01 obtained from distributor Emai Plastic Raw Material (Dongguan) Inc

5. Experimental Method

Samples from both lots will be randomly selected. The material samples will then be evaluated at external testing laboratories BSC has determined to be capable of conducting required test to all applicable ASTM/ISO standards. The following table list test that may be conducted to determine equivalency between the two lots. As test results are reviewed additional test may be deemed necessary by the team to establish equivalency. All test results and associated analysis will be added to this document upon completion.

Test ID	**Test Name**	**Test Purpose**
1	**Fourier Transform Infrared Spectroscopy (FTIR)**	Evaluates the degree of similarity in bulk composition of polymers.
2	**Melt Flow Index**	Measures the viscosity of polymers which is an indicator of molecular weight.
3	**Oxidative Induction Time (OIT)**	Highly accelerated stress test used to determine long term stability equivalence of polymers.
4	**Gas Chromatography/ Mass Spec (GC-MS)**	Provides evidence of molecular weight equivalence. Determines masses of particles, for determining the elemental composition of a sample
5	**High Performance Liquid Chromatography (HPLC-MS)**	Identifies and quantifies individual components of the materials, will detect the additive package
6	**X-Ray Fluorescence (XFR) or Inductively Coupled Plasma Mass Spectrometry (ICP)**	Determines range of metals and several non-metals

6. Attachments:

Attachment	Description
Attachment 1	Channel Prime Alliance Certificate of Analysis (CoA)
Attachment 2	Marlex® HGX-030-01 Technical Data Sheet
Attachment 3	Marlex® HGX-030-01 MSDS
Attachment 4	Channel Prime Alliance Lot CofA

For more information and technical assistance contact:

Phillips Sumika Polypropylene Company
P.O. Box 4910
The Woodlands, TX 77387-4910
800.231.1212 ext 4849

Marlex® HGX-030-01

Polypropylene Homopolymer, Fiber Grade, Low Water Carryover

Applications:

- Woven industrial fabric and bags
- Rope and cordage
- Woven carpet backing
- Woven geotextile fabrics

Agency Information:

- Meets FDA Regulation 21 CFR 177.1520 and is suitable for food packaging applications.

Nominal Properties

Property	English	SI	Method
Density	0.905 g/cc	0.905 g/cc	ASTM D1505
Melt Flow Rate, @ 230°C	3.8 g/10min	3.8 g/10min	ASTM D1238
Tensile Strength at Yield, 50 mm/min	5,350 psi	36.9 MPa	ASTM D638
Flexural Modulus, Secant, 1.3 mm/min	230,000 psi	1,590 MPa	ASTM D790
Notched Izod Impact Strength, @ 23°C	0.7 ft*lbf/in	37 J/m	ASTM D256
Heat Deflection Temperature, @ 0.455 MPa	214 °F	101 °C	ASTM D648
Rockwell Hardness, R Scale	97	97	ASTM D785
Shore D Hardness	71	71	ASTM D2240

Mechanical properties were determined using injection-molded specimens 1/8" (3.2mm) thick molded per ASTM D4101, unless otherwise noted.

The nominal properties reported herein are typical of the product but do not reflect normal testing variance and therefore should not be used for specification purposes.

MSDS #240590 Revision Date January, 2006

Phillips Sumika Polypropylene Company

221422

Phillips Sumika Polypropylene Company

CoA Date: 06/15/2005

Certificate of Analysis

Shipped To: CHANNEL PRIME ALLIANCE
1701 NORTH GRAHAM STREET
CHARLOTTE NC 28265
USA

Recipient: JUDY CREAMER
Fax:

CPC Delivery #: 86911650
PO # 221422
Weight: 182100 LB
Ship Date: 06/15/2005
Package: BULK
Mode: Hopper Car
Car #: PSPX006605
Seal No: 159345

Channel Prime Lot# PP0353133-02

Product:
MARLEX POLYPROPYLENE HGX-030-01 BULK

Lot Number: 2951877

Property	Test Method	Value	Unit
Melt Flow	ASTM D1238	3.7	g/10mi

The data set forth herein have been carefully compiled by Phillips Sumika Polypropylene Company However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Jackie Edwards
Certification Systems Specialist

For CoA questions contact Debra Bowen at 832-813-4916

Phillips Sumika Polypropylene Company

Material Safety Data Sheet

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

Marlex® Polypropylene (All Grades)

Product Use: Extrusion and Injection Molding
Synonyms: Plastic
Product CAS No.: Mixture

Company Identification:
Phillips Sumika Polypropylene Company
10001 Six Pines Drive
The Woodlands, TX 77380

Product Information:
MSDS Requests: 1 - (800) 852-5530
Technical Information: 1 - (800) 852-5531
Responsible Party: Product Safety Group
Email:msds@cpchem.com

Chevron Phillips Chemicals International N.V.
Brusselsesteenweg 355
B-3090 Overijse
Belgium

24-Hour Emergency Telephone Numbers:
HEALTH:Chevron Phillips Emergency Information Center 866.442.9628 (North America) and 1.832.813.4984 (International)
TRANSPORTATION: North America: CHEMTREC 800.424.9300 or 703.527.3887
ASIA: +1.703.527.3887
EUROPE: BIG .32.14.584545 (phone) or .32.14.583516 (telefax)
SOUTH AMERICA SOS-Cotec Inside Brazil: 0800.111.767
Outside Brazil: 55.19.3467.1600

MEDICAL APPLICATION CAUTION: Do not use this Phillips Sumika Polypropylene Company material in medical applications involving permanent implantation in the human body or permanent contact with internal body fluids or tissues.

Do not use this Phillips Sumika Polypropylene Company material in medical applications involving brief or temporary implantation in the human body or contact with internal body fluids or tissues unless the material has been provided directly from Phillips Sumika Polypropylene Company under an agreement which expressly acknowledges the contemplated use.

Phillips Sumika Polypropylene Company makes no representation, promise, express warranty or implied warranty concerning the suitability of this material for use in implantation in the human body or in contact with internal body fluids or tissues.

SECTION 2 HAZARDS IDENTIFICATION

****

EMERGENCY OVERVIEW

Opaque, translucent waxy pellets or fluff, mild odor.

NFPA RATINGS: **Health:** 1 **Flammability:** 1 **Reactivity:** 0

EU Classification:
Safety Phrases:
S22: Do not breathe dust.

****

IMMEDIATE HEALTH EFFECTS:
Eye: Contact with the eyes may cause irritation due to the abrasive action of the dust. Not expected to cause prolonged or significant eye irritation. Material is dusty and may scratch the surface of the eye.
Skin: Contact with the skin is not expected to cause prolonged or significant irritation.
Ingestion: Not expected to be harmful if swallowed.
Inhalation: Not expected to be harmful if inhaled.

SECTION 3 COMPOSITION/ INFORMATION ON INGREDIENTS

COMPONENT	CAS NUMBER	AMOUNT	EINECS / ELINCS	SYM	R-Phrases
Propylene Ethylene Copolymer	9010-79-1	<= 99 % weight	NA	NA	NA
Polypropylene	9003-07-0	<= 99 % weight	NA	NA	NA
Polyethylene	9002-88-4	< 49 % weight	EXEMPT	NA	NA
Polyethylene Hexene Copolymer	25213-02-9	< 49 % weight	EXEMPT	NA	NA
Ethylene-octene-1 Copolymer	26221-73-8	< 49 % weight	NA	NA	NA
Polyethylene Butene Copolymer	25087-34-7	< 49 % weight	NA	NA	NA
Related Materials		< 4 % weight	NA	NA	NA

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling / Peak	Notation
Ethylene-octene-1 Copolymer	ACGIH	Not Established	NA	NA	NA
Polyethylene	ACGIH	3 mg/m3	NA	NA	NA
Polyethylene	German MAK	6 mg/m3	NA	NA	NA
Polyethylene Butene Copolymer	ACGIH	Not Established	NA	NA	NA
Polyethylene Hexene Copolymer	ACGIH	Not Established	NA	NA	NA
Polypropylene	ACGIH	3 mg/m3	NA	NA	NA
Polypropylene	German MAK	6 mg/m3	NA	NA	NA
Propylene Ethylene Copolymer	ACGIH	Not Established	NA	NA	NA
Related Materials	ACGIH	Not Established	NA	NA	NA

Control as Particulate Not Otherwise Classified (PNOC). The ACGIH Guideline* for respirable dust is 3.0 mg/m3 and 10.0 mg/m3 for total dust. The OSHA PEL for respirable dust is 5.0 mg/m3 and 15.0 mg/m3 for total dust.

* This value is for inhalable (total) particulate matter containing no asbestos and < 1.0% crystalline silica.

SECTION 4 FIRST AID MEASURES

Eye: Flush eyes with running water immediately while holding the eyelids open. Remove contact lenses, if worn, after initial flushing, and continue flushing for at least 15 minutes. Get immediate medical attention.
Skin: To remove the material from skin, use soap and water. Discard contaminated clothing and shoes or thoroughly clean before reuse. Get medical attention if any symptoms develop. If the hot material gets on skin, quickly cool in water. See a doctor for extensive burns. Remove contaminated clothing and shoes. Wash skin with soap and water. Wash or clean contaminated clothing and shoes before reuse.
Ingestion: If swallowed, do not induce vomiting. Give the person a glass of water or milk to drink and get immediate medical attention. Never give anything by mouth to an unconscious person.
Inhalation: Move the exposed person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if breathing difficulties continue.

SECTION 5 FIRE FIGHTING MEASURES

Explosive dust clouds may be produced.
FIRE CLASSIFICATION:
OSHA Classification (29 CFR 1910.1200): Not classified by OSHA as flammable or combustible.
NFPA RATINGS: **Health:** 1 **Flammability:** 1 **Reactivity:** 0
FLAMMABLE PROPERTIES:
Flashpoint: 343°C (649.4°F)
Autoignition: NDA
Flammability (Explosive) Limits (% by volume in air): **Lower:** NA **Upper:** NA

EXTINGUISHING MEDIA: Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

PROTECTION OF FIRE FIGHTERS:
Fire Fighting Instructions: If possible, water should be applied as a spray from a fogging nozzle since this is a surface burning material. The application of high velocity water will spread the burning surface layer. This material will burn although it is not easily ignited. For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing apparatus.
Combustion Products: Highly dependent on combustion conditions. A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Protective Measures: Eliminate all sources of ignition in vicinity of spilled material. Wear appropriate personal protective equipment when cleaning up spills. Refer to Section 8.
Spill Management: Refer to OSHA Standard 29 CFR 1910.1026(j) Chromium (VI) Cleaning Methods for proper methods of cleaning. Reduce airborne dust and prevent scattering by moistening with water. Stop the source of the release if you can do it without risk. Contain release to prevent further contamination of soil, surface water or groundwater. Clean up spill as soon as possible, observing precautions in Exposure Controls/Personal Protection. Use appropriate techniques such as applying non-combustible sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations.
Reporting: U.S.A. regulations may require reporting spills of this material that could reach any surface waters. Report spills to local authorities and/or the National Response Center at (800) 424-8802 as

appropriate or required.

SECTION 7 HANDLING AND STORAGE

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL . REFER TO PRODUCT LABEL OR MANUFACTURERS TECHNICAL BULLETINS FOR THE PROPER USE AND HANDLING OF THIS MATERIAL .

Precautionary Measures: Use caution to avoid creation of dusts and to prevent inhalation of product dust (fines). Avoid contact with product dust. Airborne dust concentrations above 20 mg/L may create a dust explosion hazard. Keep out of water sources and sewers. Spilled pellets may create a slipping hazard. Avoid breathing vapors or fumes which may be released during thermal processing. Do not breathe dust at levels above the recommended exposure limits. Avoid breathing material. Keep container closed. Use only with adequate ventilation. Avoid contact with eyes, skin and clothing. Discard contaminated clothing and shoes or thoroughly clean before reuse. Do not breathe dust. Avoid contaminating soil or releasing this material into sewage and drainage systems and bodies of water.
Unusual Handling Hazards: At temperatures (>350°F, >177°C), polyethylenes can release vapors and gases, which are irritating to the mucous membranes of the eyes, mouth, throat, and lungs. These substances may include acetaldehyde, acetone, acetic acid, formic acid, formaldehyde and acrolein. Based on animal data and limited epidemiological evidence, NTP, IARC (2A), and OSHA have listed formaldehyde as a probable human carcinogen. Following all recommendations within this MSDS should minimize exposure to thermal processing emissions.
Static Hazard: Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary but may not, by themselves, be sufficient. Review all operations, which have the potential of generating an accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106, 'Flammable and Combustible Liquids, National Fire Protection Association (NFPA 77), Recommended Practice on Static Electricity' (liquids, powders and dusts), and/or the American Petroleum Institute (API) Recommended Practice 2003, 'Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents' (liquids).
General Storage Information: Treat as a solid that can burn. Store away from oxidizing materials, in a cool, dry place with adequate ventilation. Bond and ground transfer equipment. DO NOT USE OR STORE near heat, sparks or open flames. USE AND STORE ONLY IN WELL VENTILATED AREA. Keep container closed when not in use.
Container Warnings: Containers, even those that have been emptied, can contain residues of dusts or solid particulates which may create both health and fire/explosion hazards.

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

GENERAL CONSIDERATIONS:
Consider the potential hazards of this material (see Section 3), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

ENGINEERING CONTROLS:
Use in a well-ventilated area. If handling results in dust generation, special ventilation may be needed to ensure that dust exposure does not exceed the OSHA PEL for nuisance dust. If heated material generates vapor or fumes, use process enclosures, local exhaust ventilation, or other engineering controls to control exposure.

PERSONAL PROTECTIVE EQUIPMENT:

Eye/Face Protection: Wear eye protection such as safety glasses, chemical goggles, or faceshields if engineering controls or work practices are not adequate to prevent eye contact.
Skin Protection: Wear impervious protective clothing to prevent skin contact. Selection of protective clothing may include gloves, apron, boots, and complete facial protection depending on operations conducted. Users should determine acceptable performance characteristics of protective clothing. Consider physical requirements and other substances present when selecting protective clothing. Suggested materials for protective gloves include: Nitrile
Respiratory Protection: If exposure is anticipated to be greater than applicable exposure limits, wear a NIOSH approved respirator that provides adequate protection from measured concentrations of this material. Use the following elements for air-purifying respirators: Organic Vapor and Formaldehyde. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Occupational Exposure Limits:

Component	Limit	TWA	STEL	Ceiling / Peak	Notation
Ethylene-octene-1 Copolymer	ACGIH	Not Established	NA	NA	NA
Polyethylene	ACGIH	3 mg/m3	NA	NA	NA
Polyethylene	German MAK	6 mg/m3	NA	NA	NA
Polyethylene Butene Copolymer	ACGIH	Not Established	NA	NA	NA
Polyethylene Hexene Copolymer	ACGIH	Not Established	NA	NA	NA
Polypropylene	ACGIH	3 mg/m3	NA	NA	NA
Polypropylene	German MAK	6 mg/m3	NA	NA	NA
Propylene Ethylene Copolymer	ACGIH	Not Established	NA	NA	NA
Related Materials	ACGIH	Not Established	NA	NA	NA

Control as Particulate Not Otherwise Classified (PNOC). The ACGIH Guideline* for respirable dust is 3.0 mg/m3 and 10.0 mg/m3 for total dust. The OSHA PEL for respirable dust is 5.0 mg/m3 and 15.0 mg/m3 for total dust.

* This value is for inhalable (total) particulate matter containing no asbestos and < 1.0% crystalline silica.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Opaque, translucent waxy pellets or fluff, mild odor.
Autoignition: NDA
Boiling Point: NA
Evaporation Rate: NA
Flammability (Explosive) Limits (% by volume in air): **Lower:** NA **Upper:** NA
Flashpoint: 343°C (649.4°F)
Molecular Formula: Mixture
Molecular Weight: NDA
Melting Point: NDA
Octanol / Water Partition Coefficient: log-Kow: NDA
pH: NA
Pour Point: NDA
Solubility (in water): Negligible
Specific Gravity: 0.88 g/cm3 - 0.92 g/cm3
Vapor Pressure: NA
Vapor Density (AIR=1): NA
Viscosity: NA
Percent Volatile: NDA

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Conditions to Avoid: Not Applicable
Incompatibility With Other Materials: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Hazardous Decomposition Products: Low molecular weight hydrocarbons, alcohols, aldehydes, acids and ketones can be formed during thermal processing.
Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

IMMEDIATE HEALTH EFFECTS:

Acute Oral Toxicity: LD50 / not known
Acute Dermal Toxicity: LD50 / not known
Acute Inhalation Toxicity: LC50 / not known / 4 hour(s)

Eye Irritation: This material is not expected to be irritating to the eyes.
Skin Irritation: This material is not expected to be irritating to the skin.

ADDITIONAL TOXICOLOGY INFORMATION:
This product contains POLYMERIZED OLEFINS.
During thermal processing (>350°F, >177°C) polyolefins can release vapors and gases (aldehydes, ketones and organic acids) which are irritating to the mucous membranes of the eyes, mouth, throat, and lungs. Generally these irritant effects are all transitory. However, prolonged exposure to irritating off-gases can lead to pulmonary edema. Formaldehyde (an aldehyde) has been classified as a probable human carcinogen by NTP, IARC (2A), and OSHA based on animal data and limited epidemiological evidence. Long-term exposure to high dust concentrations may cause non-debilitating lung changes.

SECTION 12 ECOLOGICAL INFORMATION

ECOTOXICITY:
Fish or birds may eat pellets which may obstruct their digestive tracts.

ENVIRONMENTAL FATE:
This material is not expected to be readily biodegradable.

SECTION 13 DISPOSAL CONSIDERATIONS

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

SECTION 14 TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition). Consult the appropriate domestic or international mode-specific and quantity- specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

Shipping Descriptions per regulatory authority.

US DOT

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

ICAO / IATA

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

IMO / IMDG

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

RID / ADR

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION

SECTION 15 REGULATORY INFORMATION

SARA 311/312 CATEGORIES:

1.	Immediate (Acute) Health Effects:	NO
2.	Delayed (Chronic) Health Effects:	NO
3.	Fire Hazard:	NO
4.	Sudden Release of Pressure Hazard:	NO
5.	Reactivity Hazard:	NO

REGULATORY LISTS SEARCHED:

01= CA Prop 65	17 = FDA 178	33 = -
02 = LA RTK	18 = FDA 179	34 = -
03 = MA RTK	19 = FDA 180	35 = -
04 =MN Hazardous Substance	20 = FDA 181	36 = -
05 =NJ RTK	21 = FDA 182	37 = SARA Section 302
06 = PA RTK	22 = FDA 184	38 = SARA Section 313
07 = -	23 = FDA 186	39 = TSCA 12 (b)
08 = -	24 = FDA 189	40 = TSCA Section 4
09 = CWA Section 311	25 = IARC Group 1	41 = TSCA Section 5(a)
10 =DOT Marine Pollutant	26 = IARC Group 2A	42 = TSCA Section 8(a) CAIR
11 = FDA 172	27 = IARC Group 2B	43 = TSCA Section 8(a) PAIR
12 = FDA 173	28 = IARC Group 3	44 = TSCA Section 8(d)
13 = FDA 174	29 = IARC Group 4	45 = WHIMS - IDL
14 = FDA 175	30 = NTP Carcinogen	46 = Germany D TAL
15 = FDA 176	31 = OSHA Carcinogen	47 = Germany WKG
16 = FDA 177	32 = OSHA Highly Hazardous	48 = DEA List 1
		49 = DEA List 2

The following components of this material are found on the regulatory lists indicated.

Polyethylene 4

WHMIS CLASSIFICATION:

This product is not considered a controlled product according to the criteria of the Canadian Controlled Products Regulations.

CHEMICAL INVENTORY LISTINGS:

AUSTRALIA	YES (AUS)
CANADA	YES (DSL)
CHINA	YES (IECSC)
EUROPEAN UNION	YES (EINECS)
JAPAN	YES (ENCS)
KOREA	YES (ECL)
PHILIPPINES	YES (PICCS)
UNITED STATES	YES (TSCA)

EU LABELING:
Symbols:
NA - Not Applicable
Risk and Safety Phrases:
S22: Do not breathe dust.

SECTION 16 OTHER INFORMATION

NFPA RATINGS: Health: 1 Flammability: 1 Reactivity: 0 Special: NA

(0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme, PPE:- Personal Protection Equipment Index recommendation, *- Chronic Effect Indicator). These values are obtained using the guidelines or published evaluations prepared by the National Fire Protection Association (NFPA).

REVISION STATEMENT: The following sections have been updated: 3

ABBREVIATIONS THAT MAY HAVE BEEN USED IN THIS DOCUMENT:

TLV	-	Threshold Limit Value	TWA	-	Time Weighted Average
STEL	-	Short-term Exposure Limit	PEL	-	Permissible Exposure Limit
ACGIH	-	American Conference of Government Industrial Hygienists	OSHA	-	Occupational Safety & Health Administration
NIOSH	-	National Institute for Occupational Safety & Health	NFPA	-	National Fire Protection Agency
WHMIS	-	Workplace Hazardous Materials Information System	IARC	-	Intl. Agency for Research on Cancer
EINECS	-	European Inventory ofexisting Commercial Chemical Substances	RCRA	-	Resource Conservation Recovery Act
SARA	-	Superfund Amendments and Reauthorization Act.	TSCA	-	Toxic Substance Control Act
EC50	-	Effective Concentration	LC50	-	Lethal Concentration
LD50	-	Lethal Dose	CAS	-	Chemical Abstract Service
NDA	-	No Data Available	NA	-	Not Applicable
<=	-	Less Than or Equal To	>=	-	Greater Than or Equal To
CNS	-	Central Nervous System	MAK	-	Germany Maximum Concentration Values

This data sheet is prepared according to the latest adaptation of the EEC Guideline 67/548.
This data sheet is prepared according to the OSHA Hazard Communication Standard (29 CFR 1910.1200).
This data sheet is prepared according to the ANSI MSDS Standard (Z400.1).
This data sheet was prepared by EHS Product Stewardship Group, Chevron Phillips Chemical Company LP, 10001 Six Pines Drive, The Woodlands, TX 77380.
This data sheet is prepared according to the Globally Harmonized System (GHS).

The above information is based on the data of which we are aware and is believed to be correct as of the date hereof. Since this information may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the date hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.