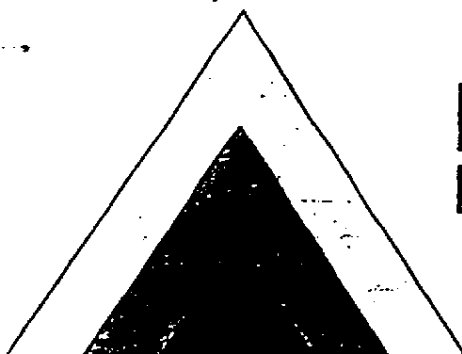




Hycar® Elastomers

710701

710726

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Form Number 11
MATERIAL SAFETY DATA SHEET

HYCAR(®) ELASTOMERS:

1010X46
1430X20MSDS Number: 88159
Issue date: NOVEMBER, 1988

SECTION I

<u>Manufacturer</u>	<u>Chemical Name/Synonyms</u>	<u>CAS Registry No.</u>
The BFGoodrich Company	Elastomeric (nitrile)	9003-18-3
Elastomers & Latex Division	copolymer	
6100 Oak Tree Blvd.		
Cleveland, OH 44131	<u>TOSCA Status</u>	
Telephone: 1-800-528-0200	On EPA Inventory	
<u>Transportation Emergency</u>		
<u>Telephone</u>	<u>Formula</u>	
CHEMTREC: (800) 424-9300	CH ₂ CH:CH (CH ₂) ₂ CH(CN)	

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

All additives (except dusting agent) are physically bound in the compound during manufacturing and are not expected to create any hazard when the product is handled and processed in accordance with good manufacturing and industrial hygiene practice and by following the guidelines in this bulletin. Small amounts of the following may be present:

	<u>C.A.S.</u> <u>Number</u>	<u>Amount in</u> <u>Product*</u>	<u>ACGIH</u> <u>TLV-TWA</u>	<u>OSHA</u> <u>PEL</u>
- Acrylonitrile	107-13-1	<20 ppm	2 ppm, A2, skin	2 ppm
- Butadiene	106-99-0	< 5 ppm	10 ppm, A2	1,000 ppm**
- Styrene	100-42-5	<0.01%	50 ppm	100 ppm
- Talc (dusting agent present on 1430X20)	---	3-7%	2 mg/m ³	20 Mppcf

* Typical amount - not a specification.

** OSHA intends to lower this value but has not proposed a specific limit.

(SEE PAGE 2 FOR EXPLANATORY NOTES)

BFG15116

The BFGoodrich Company, Chemical Group/6100 Oak Tree Blvd., Cleveland, Ohio 44131

BFGoodrich
Chemical Group

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Explanatory Notes:

- TLV-TWA: Threshold Limit Value - Time Weighted Average for concentration of the chemical substance in the ambient workplace air for a normal 8-hour workday, 40-hour workweek, to which nearly all workers may be repeatedly exposed without adverse effect. American Conference of Governmental Industrial Hygienists, 1988/1989 Edition.
- OSHA PEL: OSHA Permissible Exposure Limit, 8-hour TWA. 29CFR1910.1000 and 1910.1045.
- The "skin" notation calls attention to the skin as an additional significant route of absorption of the listed chemical.
- A2 means "suspected human carcinogen" (ACGIH).

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS (Typical data, not specifications)

<u>Boiling Point</u> Not applicable (NA)	<u>pH</u> NA	<u>Specific Gravity (H₂O=1)</u> 0.95-1.02
<u>Solubility in Water</u> Insoluble	<u>% Volatile by Weight</u> <1% (moisture)	<u>Appearance and Odor</u> 1010X46: Cream colored slab. 1430X20: Light brown powder. Mild odor is characteristic.
<u>Vapor Density (Air=1)</u> NA	<u>Vapor Pressure</u> NA	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

<u>Flash Point</u> NA	<u>Ignition Temperature</u> 700°F (373°C)* * ASTM D-1929	<u>Flammable Limits:</u> Lower explosion limit: NA Upper explosion limit: NA
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* Result obtained on Hycar[®] 1092-80. It is considered to be representative of the typical value expected for all Hycar[®] nitrile elastomers.

Extinguishing Media

Water. ABC dry chemical. Protein type air foams. Hycar[®] nitrile elastomers would be considered "ordinary combustibles" (NFPA defined Class A). Carbon dioxide is generally not recommended for use on Class A fires as a lack of cooling capacity may result in reignition.

Special Firefighting Procedure

Wear positive pressure self-contained breathing apparatus (SCBA). Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic combustion gases from any source. In enclosed or poorly ventilated areas, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

Unusual Fire and Explosion Hazards

None expected for elastomer as delivered.

NOTE: As delivered, powder elastomers do not represent a dust explosion hazard based on tests using the Hartmann vertical tube apparatus. These elastomers do not contain "fines," or dust, of sufficient particle size or amount to propagate ignition by this method of test.

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CAUTION: Grinding powder elastomers may produce particles small enough to create a dust explosion potential. As the need exists, implement standard safety precautions for handling finely divided powders such as eliminating likely sources of ignition, including static buildup, providing adequate ventilation, properly maintaining and operating dust control devices, and properly bonding and grounding processing equipment.

SECTION V - REACTIVITY DATA

<u>Stability</u>	<u>Hazardous Polymerization</u>	<u>Incompatibility</u>
Stable	Will not occur	Conditions to avoid: Overheating Materials to avoid: None known

Hazardous Decomposition Products

CO, CO₂, HCN and small amounts of aromatic and aliphatic hydrocarbons. Combustion products from rubber, like those of other natural and synthetic materials, must be considered toxic.

SECTION VI - HEALTH HAZARD DATA

<u>Threshold Limit Value</u>	<u>Carcinogenicity</u>	<u>Medical Conditions Aggravated by Exposure</u>
None established by OSHA or ACGIH.	Products not listed by IARC, NTP or OSHA.	None known for product as delivered.
<u>Acute Health Effects</u>	<u>Chronic Health Effects</u>	<u>Routes of Entry</u>
None known.	None known.	Inhaling process vapors. Skin contact.

Effects of Overexposure

- None expected at ambient temperature. Talc (dust) may cause eye irritation in the same manner as nuisance dust. Dust can cause shortness of breath, chronic cough or upper respiratory tract irritation.
- No adverse health effects are expected during normal processing when potential exposures are eliminated by good industrial hygiene practice and well ventilated conditions. At processing temperatures, the sum total of all ingredients may emit fumes and vapors that may cause irritation to the respiratory tract, eyes and/or skin of sensitive people. Typically, these effects are reversible upon removal from exposure and no lasting effects are expected. Most importantly, the potential for irritation will depend on the effectiveness of exhaust ventilation provided to the process area.
- Overexposure to decomposition or combustion products will cause irritation of the respiratory tract, eyes and skin. Symptoms such as coughing, tearing, and irritation should be regarded as potentially hazardous and measures taken to avoid exposure.

Emergency and First Aid Procedure

- Eye Contact: Treat as any foreign particulate matter.
- Skin Contact: Wash skin with soap and water. No effects requiring first aid are expected.
- Dust Inhalation: Remove individual to fresh air.

NOTE: For any of the above, if irritation develops, see a physician. If irritation persists from exposure to processing vapors or decomposition products, remove the affected individual from the area. Call a physician. Provide protection before allowing reentry.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

Steps to be taken in case material is released or spilled

Pick up slabs. Sweep, shovel or vacuum powder, crumbs or chunks into containers for reuse or disposal.

Waste Disposal Method

Landfill or incineration in accordance with federal, state and local regulations. These products are not defined or designated as hazardous by current provisions of the Federal (EPA) Resource Conservation and Recovery Act (RCRA, 40CFR261).

Precautions to be taken in handling and storage

- Avoid breathing dust.
- Avoid eye contact and repeated or prolonged skin contact.
- Normal Melt Processing. Virtually all elastomers will emit fumes and/or vapors when heated to processing temperatures. The concentration and composition of these vapors will depend upon variables such as the specific formulation and processing method and temperature. Always use Hycar[®] elastomers under well ventilated conditions and avoid continued or prolonged breathing of process vapors. For personal hygiene, wash thoroughly after processing compound, especially before eating, smoking or using toilet facilities. Do not store or consume food in processing areas. Do not use processing equipment to heat food.
- Cleanup following normal processing should be performed under well ventilated conditions. Elastomer may be held at process temperatures for a short time without significant thermal degradation. However, it should be noted that exposure to either elevated temperature or excessive heat history (time) will result in decomposition. Equipment should not be shut down for extended time periods with compound in it or decomposition will occur.
- Processing fume condensates, which may include toxic contaminants, may be combustible and should be periodically removed from exhaust hoods, ductwork and other surfaces. Protective clothing, including rubber gloves, should be worn during cleanup operations to prevent skin contact.
- Store in a cool, dry place away from direct light to maintain quality.
- Abnormal conditions such as equipment malfunction or using improper equipment or procedures, or hangup or stagnation of material during processing may cause decomposition. Employees involved in removing decomposing material should be provided suitable air-supplied respirators, such as NIOSH/MSHA approved positive pressure self-contained breathing apparatus.
- Compounding ingredients purchased to add to Hycar[®] elastomer may require special handling. It is your responsibility to follow the recommended precautions of the individual additive suppliers.
- Post-processing operations at your workplace or at your customer's workplace involving heat sufficient to result in polymer breakdown emitting smoke and fumes should always be conducted in such a manner to avoid inhalation of fumes. Local exhaust ventilation should be provided to prevent significant employee exposure.

SECTION VIII - CONTROL MEASURES

Ventilation

Effective general and, if necessary, local exhaust ventilation must always be provided to draw fumes or vapors away from workers to prevent routine inhalation. Ventilation must be adequate to maintain the ambient workplace atmosphere below the limits listed in Section II. Ventilation guidelines/techniques may be found in publications such as Industrial Ventilation, 19th Edition, American Conference of Governmental Industrial Hygienists, 6500 Glenway Avenue, Bldg. D-7, Cincinnati, OH 45211-4438 (\$20.00 as of October, 1988).

Respiratory Protection

Not typically required. If protection against dust is necessary, wear a particulate respirator approved by NIOSH/MSHA. Abnormal conditions such as equipment malfunction, use of improper equipment or procedures, or hangup or stagnation of compound during processing may cause decomposition. If general or local exhaust ventilation is not adequate to keep fume or vapor concentrations at nonirritating levels, then employees involved in removing decomposing material must be provided with suitable air supplied respirators, such as NIOSH/MSHA approved positive pressure self-contained breathing apparatus.

Protective Equipment

- Safety glasses (goggles suitable for keeping dust out of the eyes when handling powdered rubber).
- Protective gloves.

SECTION IX - TRANSPORTATION

For domestic transportation purposes, these products are not defined or designated as a hazardous material by the U.S. Department of Transportation under Title 49 of the Code of Federal Regulations, 1986 Edition.

- DOT Proper Shipping Name: Not applicable
- DOT Hazard Class: Not applicable
- DOT Label: Not applicable
- UN/NA Hazard No.: Not applicable
- Reportable Quantity (RQ): Not applicable

SECTION X - HAZARD CODES

NFPA 704*

Health: 2
Flammability: 1
Reactivity: 0
Special: None

HMIS**

Health: 0
Flammability: 1
Reactivity: 0
Personal Protection: B

Key: 0 = insignificant; 1 = slight; 2 = moderate; 3 = high; 4 = extreme.

* National Fire Protection Association rating identifies the severity of hazards of material during a fire emergency (i.e., "on fire").

** Hazardous Materials Identification System, National Paint and Coatings Assn. rating applies to product "as packaged" (i.e., ambient temp.).

USER'S RESPONSIBILITY

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to use this information to develop appropriate work practice guidelines and employee instructional programs for your operation.

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APPENDIX A - ACRYLONITRILE

By simulating manufacturing conditions, we have generated objective data indicating that Hycar[®] NBR elastomers are incapable of releasing acrylonitrile resulting in airborne concentrations above one (1) ppm under normally expected conditions of handling, processing and use. Exaggerated conditions, including open mill mixing at elevated temperatures, indicates the maximum acrylonitrile level to which a mill operator would be exposed to is less than 0.5 ppm. Based on these data, Hycar[®] NBR elastomers do not require warning labels under the acrylonitrile standard (OSHA 1910.1045). Customers should not claim exemption from any of the provisions of the OSHA standard by use of BFGoodrich data alone, but should do sufficient in-plant testing of acrylonitrile levels to assure compliance of their operations.

APPENDIX B - BUTADIENE

Personnel monitoring during manufacture of Hycar[®] 1043 and 1094 elastomer determined that worker exposure level was below 0.2 ppm. This is well below the 10 ppm Threshold Limit Value established by ACGIH. Based on our experience, we expect the presence of butadiene in the ambient workplace air to be below 1.5 ppm for all Hycar[®] elastomers.

APPENDIX C - STYRENE

During March, 1988, based upon revised definitions, the International Agency for Research on Cancer (IARC) reclassified styrene monomer from Group 3 to Group 2B. For hazard communication purposes under OSHA Standard 1910.1200, this reclassification requires styrene monomer to be listed as a possible carcinogen. Literature reports indicate that styrene can damage chromosomes (Clastogen). The human health implications of these Invivo/Invitro results are not known. Styrene is not teratogenic but may damage a developing fetus.