INOX GFL GROUP

BEYOND INFINITY

FLUONOX®

Fluoroelastomers

Engineered for demanding applications

FLUORO-SURFACTANT FREE

GFL®

GUJARAT FLUOROCHEMICALS

VALUE THROUGH GREEN CHEMISTRY

ABOUT THE COMPANY

Gujarat Fluorochemicals Limited (GFL), is a part of the INOXGFL Group - an Indian conglomerate with a legacy of more than a century. The group has diversified business segments comprising of fluoropolymers, specialty chemicals, battery chemicals, wind energy and renewables.





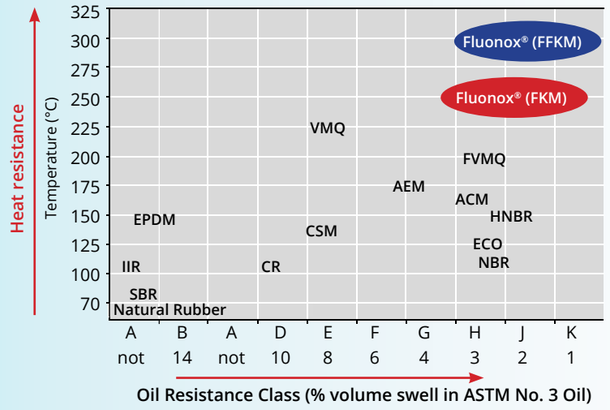

GFL is a leading producer of fluoropolymers, fluoro specialities, refrigerants and chemicals for applications in varied industries. GFL derives its strength from expertise in fluorine chemistry, vertical integration from natural minerals to Fluoropolymers and strong R&D, enabling us to provide one of the best quality products meeting all regulatory compliances, to our clientele globally. GFL started with India's largest refrigerant manufacturing unit at Ranjitnagar, Gujarat, India. Foraying into new avenues in 2007, with one of the world's most integrated facilities at Dahej, Gujarat, India, GFL now has a diverse portfolio of fluoropolymers comprising PTFE, PFA, FKM, PVDF and fluoropolymer additives. By setting up capacities for materials (fluoropolymers and specialty chemicals) catering to new growth sectors, the group is extending its reach into EVs, solar energy and hydrogen fuel cells. Several capacities are being set up at GFL including those for PVDF used as cathode binders in EV batteries, chemicals for EV batteries and membranes for hydrogen electrolysers.

With three manufacturing facilities in India, a captive fluorspar mine in Morrocco, offices and warehouses in Europe and USA, and a marketing network spread across the world, GFL is one of the most established players in fluoropolymers and fluorospecialities markets globally.

ABOUT FLUONOX FLUOROELASTOMERS

Modern sealing applications demand exceptional material performance, particularly in environments characterized by wide temperature variations and exposure to chemically aggressive media. Fluonox fluoroelastomers (FKM) are the material of choice for such conditions due to their superior chemical resistance and thermal stability. These properties stem from the high bond dissociation energy of the carbon-fluorine (C–F) bond, which imparts outstanding durability and inertness to the polymer matrix.

ELASTOMERS' PERFORMANCE CHART



TYPICAL PROPERTIES OF FKM

Chemical Resistance:
Outstanding resistance to degradation in a broad spectrum of fluids, chemicals, oils, lubricants, coolants, and most mineral acids—significantly outperforming non-fluorinated elastomers.

Thermal Stability:
Maintains excellent compression set resistance even at elevated temperatures, ensuring long-term sealing integrity.

Low Permeability:
Exhibits extremely low permeability to a wide range of substances, including oxygenated automotive fuels, contributing to reduced emissions and enhanced fuel system performance.

Hydrocarbon Compatibility:
Highly resilient to aliphatic and aromatic hydrocarbons that typically degrade conventional rubber materials.

Environmental Resistance:
Demonstrates exceptional resistance to atmospheric oxidation, fungal growth, and mold, making it suitable for outdoor and biologically active environments.

Flame Resistance:
Possesses inherently low burning characteristics, offering superior flame resistance compared to non-fluorinated hydrocarbon rubbers.

CROSS-LINKING MECHANISM

CURING SYSTEMS OVERVIEW

FKM curing systems play a vital role in determining the performance characteristics of the fluoroelastomer compounds. The most widely used system is the bisphenol cure system, which provides excellent heat resistance, chemical stability, and low compression set, making it ideal for high-temperature applications and aggressive chemical environments. Peroxide curing, on the other hand, offers superior resistance to steam, amines, and hot water, making it suitable for applications involving strong bases and aqueous media.

IONIC-CURABLE/BISPHENOL-CURABLE

Bisphenol-curable materials show excellent heat ageing characteristics, excellent scorch safety, fast cure rates and excellent compression set. The Bisphenol curing system produces FKM vulcanizates with the best thermal stability and low compression set, making it a preferred choice for high-temperature static & dynamic sealing applications. The Bisphenol curable FKM are available as raw gums (KR series) and cure incorporated pre-compounds (KB series). A diverse portfolio of Bisphenol curable grades with different combinations of viscosities, cure rates, and cross-linking densities make these grades suitable for different applications.

PEROXIDE-CURABLE

Peroxide-curable grades provide better chemical and fluid resistance than Bisphenol-curable FKM grades performing better in the most severe end-use environments. Peroxide curing system provides superior resistance to aggressive automotive lubricating oils, steam, organic and mineral acids, amines and aggressive biodiesel. Peroxide cure systems also generally yields compounds with better mechanical properties, such as higher tensile strength and tear resistance.

****The comparison of properties of the cure systems, both similarities and differences are subject to the quantity of filler(s) and curative(s) used in the compound formulation.**

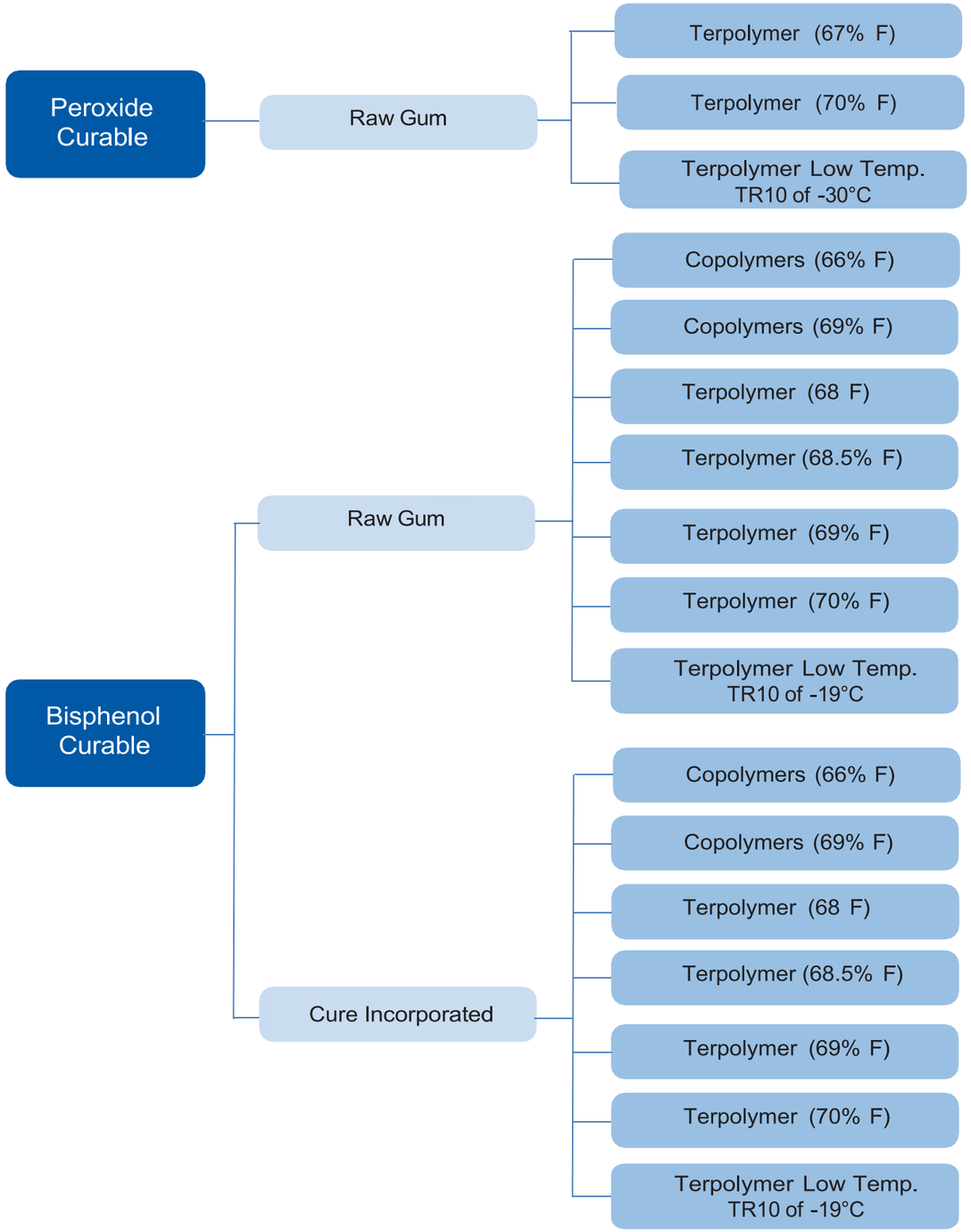
PROCESSING METHODS

FLUONOX® FKM grades are compatible with:

1. Compression Molding
2. Transfer Molding
3. Injection Molding
4. Extrusion (ideal for hoses and wire jacketing)
5. Coating.

FLUONOX® FKM PORTFOLIO OVERVIEW

Fluonox® FKM portfolio is manufactured without the use of Fluoro- surfactants



FLUONOX® FKM PRODUCT PORTFOLIO

COPOLYMER RAW GUMS

Grade	Fluorine Content (%)	TR 10 (°C/F)	Mooney Viscosity **	Product Description	Remarks
	Internal NMR	ASTM D 1329	ASTM D 1646		
KR 210	66.0	-18(-0.4)	10	Very low viscosity copolymer raw gum.	Used for coatings and as a viscosity modifier for all FKM.
KR 220	66.0	-18(-0.4)	22	Low viscosity copolymer raw gum.	General purpose.
KR 221F	66.0	-18(-0.4)	20	Low viscosity copolymer raw gum - fast cure.	Low Compression set. Injection molding.
KR 230	66.0	-18(-0.4)	30	Medium-low viscosity copolymer raw gum-fast cure.	Low Compression set. Injection/ Compression molding.
KR 235	66.0	-18(-0.4)	28	Medium-low viscosity copolymer raw gum.	General purpose. Injection molding.
KR 250	66.0	-18(-0.4)	46	Medium viscosity copolymer raw gum.	General purpose. Compression/Transfer molding.
KR 260	66.0	-18(-0.4)	55	Medium-high viscosity copolymer raw gum.	General purpose. Compression/Transfer molding.
KR 270	66.0	-18(-0.4)	70	High viscosity copolymer raw gum.	General purpose. Compression/Transfer molding.
KR 200	66.0	-18(-0.4)	135	Very high viscosity copolymer raw gum.	Oil & Gas industry application. Rapid Gas Decomposition (RGD) resistance.
KR 252H	69.0	-5(23)	40	High fluorine copolymer raw gum.	General purpose. Compression/Transfer molding for fuel seals.

COPOLYMER BISPHENOL CURE INCORPORATED

Grade	Fluorine Content (%)	TR 10 (°C/F)	Mooney Viscosity**	Product Description	Remarks
	Internal NMR	ASTM D 1329	ASTM D 1646		
KB 2203	66.0	-18(-0.4)	21	Low viscosity copolymer with very good flowability.	Injection, Compression, Transfer molding, Extrusion and calendaring.
KB 2250Z	66.0	-18(-0.4)	23	Excellent mold flow, tear resistance and bonding to metal.	Injection molding of complex shapes - Metal bonding.
KB 2252	66.0	-18(-0.4)	23	Excellent mold flow and high elongation/hot tear resistance.	Injection, Compression, Transfer molding of complex shapes, calendaring and Extrusion.
KB 2253	66.0	-18(-0.4)	23	Fast cure rate, excellent mold release.	Injection molding, O-rings, gaskets.
KB 2255	66.0	-18(-0.4)	23	Very good Compression set. High crosslink density.	Injection molding, O-rings, seals, gaskets.
KB 2259F	66.0	-18(-0.4)	25	Outstanding Compression set and low post cure time.	Injection molding O-rings, gasket.
KB 2371Z	66.0	-18(-0.4)	40	Excellent mold flow, tear resistance and bonding to metal.	Injection molding of complex shapes -Metal bonding.
KB 2400Z	66.0	-18(-0.4)	40	Excellent mold flow, tear resistance and excellent bonding to metal.	Injection/Compression/Transfer molding. Bonded seals and gaskets.
KB 2402	66.0	-18(-0.4)	40	Excellent mold flow and high elongation/hot tear resistance.	Compression/Transfer molding of complex shapes.
KB 2403	66.0	-18(-0.4)	40	Very good Compression set. High crosslink density.	Compression, Transfer or Injection molding of O-rings and seals.
KB 2652	66.0	-18(-0.4)	65	High viscosity copolymer, very good Compression set and hot tear resistance.	Compression molding of gaskets and seals
KB 2502H	69.0	-5(23)	38	High fluorine copolymer pre-compound.	General purpose. Compression/Transfer molding for fuel seals.

TERPOLYMER RAW GUMS

Grade	Fluorine Content (%)	TR 10 (°C/F)	Mooney Viscosity**	Product Description	Remarks
	Internal NMR	ASTM D 1329	ASTM D 1646		
KR 325	68.0	-14(7)	25	Improved chemical resistance and excellent processability.	General Purpose. Injection/Compression molding and Extrusion profiles.
KR 370	68.0	-14(7)	70	High viscosity and excellent processability.	General purpose. Compression molding of oil seals and shaft seals.
KR 435	68.5	-13(9)	30	Excellent chemical resistance including oxygenated fuels.	General Purpose. Injection/Compression molding and coating applications.
KR 470	68.5	-13(9)	65	Excellent chemical resistance to mineral oils.	General purpose. Compression molding.
KR 430	69.0	-10(14)	31	Excellent chemical resistance including oxygenated fuels. Soluble in polar solvents.	General purpose. Injection, Compression and Transfer molding, coating applications.
KR 540	70.0	-7(19)	45	High fluorine terpolymer. Excellent chemical resistance and low fuel permeability.	General purpose. Injection/Compression molding.

TERPOLYMER BISPHENOL
CURE INCORPORATED

Grade	Fluorine Content (%)	TR 10 (°C/F)	Mooney Viscosity**	Product Description	Remarks
	Internal NMR	ASTM D 1329	ASTM D 1646		
KB 3300Z	68.0	-14(7)	30	Excellent hot tear resistance and bonding to metal.	Injection, Compression, Transfer molding of oil seals, shaft seals, gaskets.
KB 4303	68.5	-13(9)	30	High cross-linking density and excellent Compression set.	Injection molding of O-rings, gaskets and seals.
KB 4602	68.5	-13(9)	60	Excellent chemical and hot tear resistance.	Compression and Transfer molding of complex shapes like shaft seals, valve seals and gaskets.
KB 4603	68.5	-13(9)	60	High viscosity, high cross-linking density and excellent Compression set.	Compression and Transfer molding of O-rings, gaskets and seals.
KB 4202	69.0	-10(14)	35	Bimodal architecture. Excellent resistance to blended fuels and very good permeation resistance.	Extrusion applications like fuel hoses for E20 applications.
KB 5302	70.0	-7(19)	30	Bimodal architecture. Excellent resistance to blended fuels and very good permeation resistance.	Extrusion applications like fuel hoses for E20 applications.
KB 5301	70.0	-9(16)	30	Low viscosity, high fluorine terpolymer. Excellent chemical resistance.	Extrusion applications like fuel hoses for E20 applications.
KB 5452	70.0	-7(19)	45	Medium viscosity, high fluorine terpolymer. Excellent chemical resistance including oxygenated fuels. Very low fuel permeability.	Injection and Compression molding application for fuel sender seals.
KB 5503	70.0	-7(19)	50	Medium viscosity, high Fluorine terpolymer. Excellent chemical resistance including oxygenated fuels. Very low fuel permeability.	Injection, compression, Transfer molding of O-rings, gaskets and seals.

TERPOLYMER BISPHENOL
LOW TEMPERATURE

Grade	Fluorine Content (%)	TR 10 (°C/F)	Mooney Viscosity**	Product Description	Remarks
	Internal NMR	ASTM D 1329	ASTM D 1646		
KR 630	66.0	-19(-2)	30	Low temperature terpolymer raw gum with TR 10 at -19°C (-2°F). Good Compression set resistance and good chemical resistance.	General purpose. Injection and Transfer molding for O ring, gasket and seals.
KB 6253	66.0	-19(-2)	25	Low temperature terpolymer pre-compound with TR 10 at -19°C (-2°F). Good Compression set resistance and good chemical resistance.	Compression, Transfer or Injection molding of O-rings, gaskets and seals.

PEROXIDE CURABLE
RAW GUMS

Grade	Fluorine Content (%)	TR 10 (°C/F)	Mooney Viscosity**	Product Description	Remarks
	Internal NMR	ASTM D 1329	ASTM D 1646		
KR 320P	67.0	-15(5)	20	Low viscosity, medium-low fluorine peroxide curable terpolymer.	Injection, Transfer, Compression molding of O-rings, shaft seals, gaskets and extruded profiles.
KR 340P	67.0	-15(5)	45	Medium viscosity, medium-low fluorine peroxide curable terpolymer	
KR 520P	70.0	-5(23)	20	Low viscosity, high fluorine terpolymer.	Best chemical resistance among FKMs. Injection, transfer, Compression molding of O-rings, shaft seals, gaskets and extruded profiles.
KR 545P	70.0	-5(23)	45	Medium viscosity, high fluorine.	
KR 565P	70.0	-5(23)	65	High viscosity, high fluorine terpolymer.	
KR 525LP	70.0	-5(23)	25	Low viscosity, high fluorine terpolymer with linear structure.	Best for Extrusion. High elongation at break. Good bonding to other rubber substrates.
KR 527LP	70.4	-6(21)	25	Low viscosity, high fluorine terpolymer with linear structure.	Extrusion, suitable in fuel hose and EGR lines, excellent E20 resistance.
KR 531P	70.5	-7(19)	30	High fluorine terpolymer. Excellent battery chemical resistance and compression set.	General purpose. Injection, Compression molding for battery gasket application.

PEROXIDE CURABLE
LOW TEMPERATURE RAW GUMS

Grade	Fluorine Content (%)	TR 10 (°C/F)	Mooney Viscosity**	Product Description	Remarks
	Internal NMR	ASTM D 1329	ASTM D 1646		
KR 621PLT	64.0	-30(-22)	20	Excellent low temperature properties (TR 10 = -30°C) with reduced mold fouling and improved Compression set and good mold release with fast cure.	Injection molding of O-rings, seals and gaskets. Extruded profiles.
KR 651PLT	64.0	-30(-22)	50		Injection, Compression Transfer, molding for shaft seals, O rings, gaskets.

**Test condition: ML (1+10) @ 121°C (250 F)

RESEARCH & DEVELOPMENT

GFRC

Gujarat Fluoropolymers Research Centre (GFRC) located at Dahej, India, is at the forefront of product and application development activities and serves as an essential bridge between market requirements and manufacturing operations. It focuses on offering genuine expertise and prompt customer support on our products.

GFRC, a team of research scientists and product specialists, is equipped with state-of-the-art application development laboratory including DCS operated pilot reactors. It has collaborated with renowned research institutes globally to work on the areas of new product development and sustainable manufacturing technologies. With this, the center focuses on delivering customized Fluoropolymer products for novel applications and on developing manufacturing technologies, which have minimal impact on the environment, thereby ensuring a sustainable future for the next generation.

CORE FUNCTIONS OF GFRC

Customer Support	Production Support	Quality Support
Technical Service	Product Development	Functional Testing
Records and Citations	Process Optimisation	Certifications and Regulatory Compliances
Pre-sales Documentation	Analytical Support	Statistical Analysis and Control
Development of Processing Guidelines		Customer On-site Audits
Application Development		Customer Feedback Analysis
Product Literature		Compliance to Quality Agreements

REGULATORY COMPLIANCE

GFL is committed to “Green Chemistry” and offers environment-friendly products using sustainable technologies. Our extensive research and development in the field of Fluoropolymers enable us to comply with all major global regulations and facilitate our customers to choose greener products manufactured by sustainable technologies.

REACH - Registration, Evaluation, Authorization and Restriction of Chemicals

ROHS - Restriction of Hazardous Substances

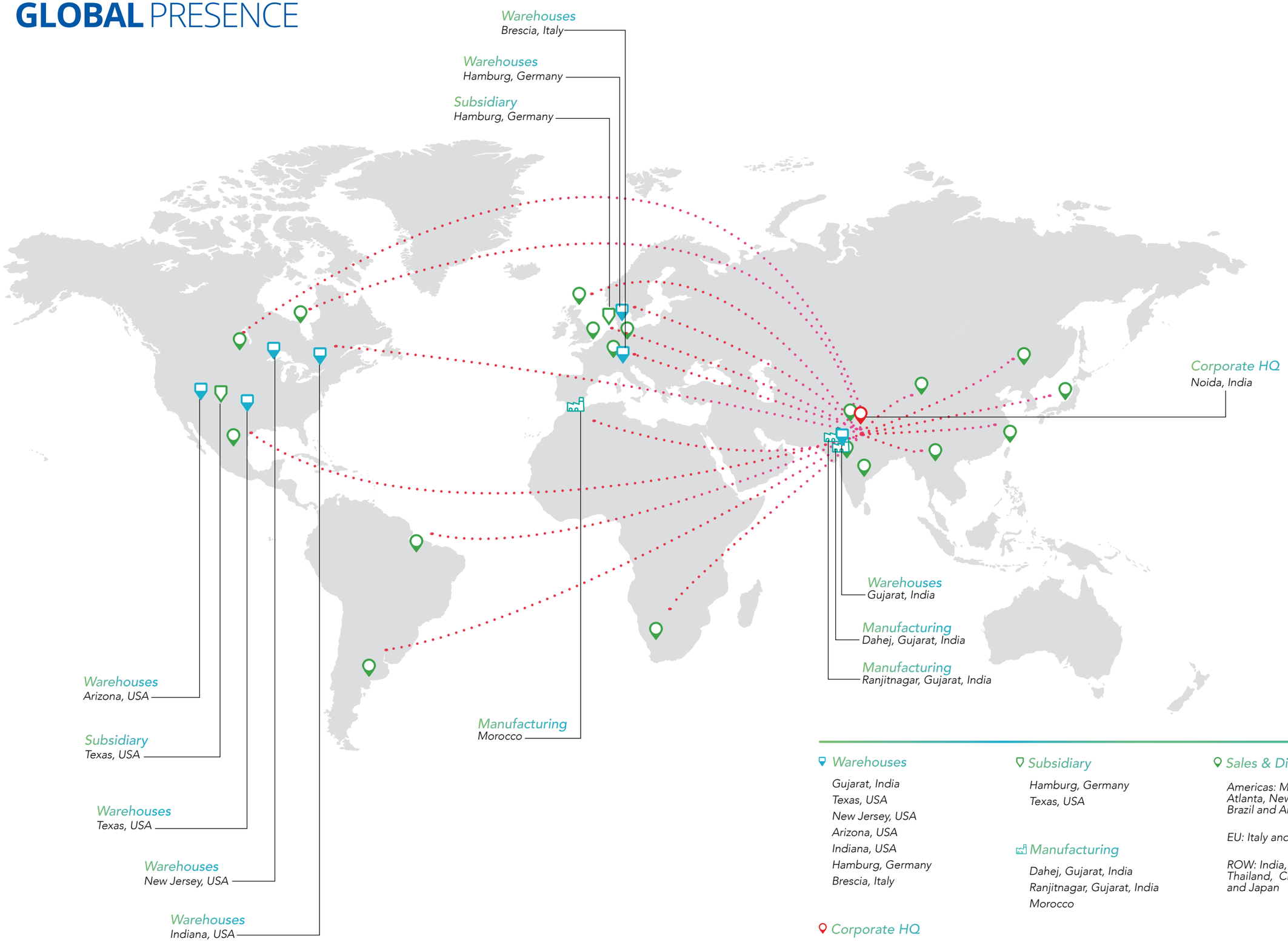
SVHC - Substances of Very High Concern

SUSTAINABILITY

GFL is committed to social, environmental and economic sustainability through responsible processes, practices and greener initiatives not only in our products but also in our principles. While consistent operating results and strong financial performance are a business imperative, pursuing success while keeping health and safety paramount, remains one of our enduring values. The company measures the impact of its business operations through the 3 key pillars of sustainability, namely People, Planet & Profit.

- SA 8000:2014 — Social Accountability System
- ISO 37001:2016 — Anti Bribery and Anti-Corruption Management System
- ISO/IEC 27001:2013 — Information Management Security System
- ISO 26000:2010 — Social Responsibility Management System
- ISO 20400:2017 — Sustainable Procurement System

GLOBAL PRESENCE



Warehouses

Gujarat, India
Texas, USA
New Jersey, USA
Arizona, USA
Indiana, USA
Hamburg, Germany
Brescia, Italy

Subsidiary

Hamburg, Germany
Texas, USA

Sales & Distribution

Americas: Michigan, Philadelphia, Atlanta, New Jersey, Mexico, Brazil and Argentina

EU: Italy and Germany

ROW: India, South Africa, Thailand, China, Korea, Taiwan, and Japan

Manufacturing

Dahej, Gujarat, India
Ranjitnagar, Gujarat, India
Morocco

Corporate HQ

Noida, India

GUJARAT FLUOROCHEMICALS

VALUE THROUGH GREEN CHEMISTRY

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