

# DuPont Oil & Gas Solutions

MEETING INDUSTRY CHALLENGES THROUGH  
SCIENCE AND INNOVATION





## Utilizing science to drive innovation



At DuPont, we are applying science to make a world of difference in the safety of your people with today's most innovative and trusted Safety, Risk Management tools and Personal Protection products in the industry.



Our trusted solutions help you reduce air emissions, improve water quality and usage, formulate cleaner fuels and develop strategic environmental plans. DuPont is also a leader in the development of alternative energy.



Our sustainable products and proven solutions are engineered to help keep your operation working at peak efficiency, improving throughput and reducing downtime, even in some of the most extreme operating environments.

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Sustainable

The Oil & Gas industry is all about delivering the world's energy safely and efficiently while safeguarding our environment for a future worth living.

## Sustainable solutions for a cleaner and safer future

Eco-friendly technologies and products are challenges of today for the future. DuPont offers numerous solutions that are created with sustainability in mind.

### DuPont is a science company with a history of innovation

Today, footprint reduction is expected of all companies. The challenge – and the opportunity – is to develop products and processes that are safer, less toxic, more energy efficient, use less water and produce fewer greenhouse gases.

DuPont has the experience and expertise to put science to work in ways that can build in attributes – at the early stages of product design – that help protect or enhance human health, safety and the environment. By bringing our science to the market, DuPont designs products and processes that pass rigorous criteria for the use of renewable resources, energy, water and materials.

As a material, technology and knowledge provider, DuPont has far reaching impact on virtually every major industry in the world. The goal is to help our customers and our customer's customers grow their businesses while contributing to social and environmental progress.

### We are reducing DuPont's Footprint:

- **Greenhouse Gas Emissions**  
72% reduction since 1990  
reduction of further 15% planned by 2015 from base year 2004.
- **Water Conservation**  
Commitment to reduce water consumption by at least 30% over the next ten years at global sites that are located where the renewable freshwater supply is either scarce or stressed. For all other sites, DuPont will hold water consumption flat on an absolute basis through the year 2015.
- **Fleet fuel Efficiency**  
By 2015, DuPont will ensure that 100% of its off-site fleet of cars and light trucks use leading technologies for fuel efficiency and fossil fuel alternatives.
- **Air Carcinogens**  
92% reduction of air carcinogenic emissions since 1990, reduction of further 50% planned by 2015 from base year 2004.
- **Independent Verification**  
On environmental management at 100% of sites.

SAFETY

ENVIRONMENT

RELIABILITY & PRODUCTIVITY



Sustainability

At DuPont, we are applying science to make a world of difference in the safety of your people with today's most innovative and trusted Safety & Risk Management tools and Personal Protection products in the industry.

## Putting safety first in the Oil & Gas industry

Our commitment is to create a safety culture for your people. We do so with today's most innovative and trusted products and expertise in safety and risk management, based on our proven track record of success.



### Chemical and biological protection

DuPont™ Tychem® product range offers lightweight comprehensive protection starting at low toxic chemicals up to toxic gases and biological hazards. Protective clothing is commonly used for chemical handling; spill clean-up and decontamination; production plants decommissioning; industrial cleaning and maintenance; storage tank and oil tanker cleaning and accident intervention.



### Solid particles and inorganic chemicals protection

DuPont™ Tyvek® offers protection from many dry particle and aerosol hazards that workers in the Oil & Gas industry come in contact with everyday.

Tyvek® is permeable to air and water vapour, yet repels water-based liquids and aerosols. It acts as an excellent barrier against particles and fibres. It is low-linting.

This unique combination of properties makes it ideal for cleaning and maintenance personnel as well as those handling hazardous chemicals or for involved in emergency response.



# Safety



## Flash fire and electric arc protection

Every day, workers in the Oil & Gas industry who work around flammable and explosive materials are exposed to the hazards of flash fires.

The correct protective clothing for the job can help protect against burn injury. Rig crews, fuel handlers, fire crews, pipeline workers, plant operators as well as mechanics and many more workers exposed to the risk of heat and flame rely on the protection of DuPont™ Nomex® to help minimize the potential for burn injuries.

DuPont™ Nomex® brand fiber is inherently flame-resistant which means its thermal protection is permanent – it cannot be washed out or worn away. Nomex® won't melt, drip or support combustion in the air. Combined with high break strength, tear resistance and abrasion resistance properties, garments made of Nomex® brand fiber help protect our people from these hazards.



## Process safety & risk management

As a leader in Process Safety & Operations Risk Management consulting, DuPont has access to people, proven systems and actionable knowledge. We have used this expertise, across a wide range of industries, to help clients successfully implement these robust systems.

### Operations Risk Management

Operations Risk Management qualitatively and quantitatively assesses the variety of risks faced by operations. Our offering is an integrated management system that builds upon our proven safety management model of technical safety to encompass process safety management (PSM) and other operational risk management systems. It helps clients implement sustainable continuous-improvement processes to manage risk in each of seven key areas through assessing, envisioning and managing, planning and implementation.

### Process Safety Management

Process Safety Management or PSM is the application of management systems and controls (programs, procedures, audits, evaluations) in a way that process hazards are identified, understood, and controlled, so that process-related injuries and incidents are prevented.



## Employee safety management

At DuPont, workplace safety is integral to our success and we believe that all injuries are preventable. Our goal is zero: zero injuries and zero incidents. Only when safety is integrated into an organization as a core business and personal value can this goal be accomplished.

DuPont workplace safety experts work with your operations leadership to develop a customized solution. We then help install an effective and sustainable management system within your workplace. From E-learning solutions, customizable training materials to safety leadership skills, DuPont methodologies are combined to teach, motivate and sustain new capabilities, to prevent injuries and incidents throughout your organization.



## Innovative safety equipment

The Oil & Gas industry has numerous hazards and requires personal protective clothing and equipment to be of the highest quality and reliability.

DuPont is committed to protecting people. Protective apparel and equipment made with DuPont™ Kevlar® brand fiber delivers the power of performance to workers exposed to a variety of cut, abrasion and high heat hazards. From undersea ropes and cables, escape chutes, helicopter landing platforms, safe refuge and blast curtains, rig crews to refinery workers, machine shop technicians and maintenance staff, apparel made with Kevlar® performance technology meets the specific performance and protection requirements of a diverse group of specialized roles. This enables workers to perform to their fullest potential –safely and comfortably– in some of the most demanding environments imaginable.

**DuPont is committed to creating an environment for sustainability by helping you reduce your environmental footprint along the value chains in which you operate.**

## **Helping create an environment for success**

We are putting science to work for a cleaner future by helping you reduce air emissions, improve water quality and usage, formulate cleaner fuels, and develop strategic environmental and energy plans. DuPont is also a leader in the development of alternative energy.



# Environ





## Clean technologies for air & fuel

### **DuPont™ STRATCO® Alkylation Technology**

We offer 70 years of experience in alkylation development, licensing, engineering and equipment installation—nearly 100 reactors installed throughout the world.

### **DuPont™ BELCO® Technologies: Clean Air**

We offer a variety of solutions for NO<sub>2</sub> reduction, pollutant and particulate control, and acid gas and mist removal across a wide range of applications.

### **DuPont™ IsoTherming®: Clean Fuels**

IsoTherming® hydroprocessing technology is a commercially proven breakthrough process that gives petroleum refiners a more economical and flexible means to produce today's ultra-low-sulfur transportation fuels.

### **DuPont™ MECS sulfuric acid Technologies:**

We are a leading global provider of process technology, proprietary specialty equipment, and technical services to the sulfuric acid industry. DuPont™ MECS technologies enable its users to operate with improved environmental characteristics including reduced air emissions, improved operational efficiencies and lower energy use.



## Water treatment technologies

From petrochemical plants and refinery process and waste water streams to the treatment of produced water and hydraulic fracturing fluids, DuPont offers products and services to meet the specific needs of the situation. Our oxidation and disinfection technology can help:

- Oxidize sulfides
- Minimize macrofouling
- Eliminate biofilms
- Control corrosion



## Environmental and energy management

### **Environmental Management**

There are many serious challenges facing the Oil & Gas industry today. DuPont can offer tailor-made solutions that integrate environmental consulting services, sustainable energy strategies, and implementation of best practices in operational effectiveness and energy. Enabling clients to achieve their sustainability goals, effectively reduce their corporate environmental footprint and maximize the return on operating assets through:

- Integrated environmental management systems
- Environmental management competency development
- Sustainability culture change models

### **Energy Efficiency**

Helping clients achieve energy efficiency and cost reductions, and improve operating team capabilities through:

- Decision-making and team building programs
- Integrated energy management programs
- Energy management competency development
- Equipment, non-capital and information technology solutions

Environment

Our commitment is to deliver solutions with unsurpassed reliability and designed to help increase the productivity of your operation, improve throughput and reduce downtime, even in the most extreme operating environments.

## Delivering reliable performance to the Oil & Gas industry

DuPont recognizes the challenges which face the Oil & Gas industry, from improving recovery factors and reserve replacement to reducing operating costs by keeping downtime to a minimum and extending operating life, all while maximizing your return on investment. By utilizing our proven range of consulting services, engineered technology solutions and high performance materials we can help you improve your reliability and productivity.



### Engineered technology solutions

DuPont Technology Solutions has the answers to tackle the demanding challenges of corrosion protection, flow assurance and enhancing reservoir productivity.

#### **DuPont™ StreaMax™**

A multilayered internal coating system specifically designed to combat asphaltene, wax and scale build up in production tubing and drill pipe.

#### **DuPont™ Capstone® Fluorosurfactants**

A fluorosurfactant with unique thermal and chemical stability which provides unsurpassed surface tension reduction. An excellent choice for stimulation & EOR applications.



### High performance materials

DuPont specializes in chemicals, polymers and elastomers. We have a wide range of products for extreme environments and applications that support:

- Increasing service life
- Improving reliability and productivity
- Maximizing performance

#### **DuPont™ Kevlar®**

Kevlar® is the primary strength reinforcement layer in flexible thermoplastic hoses used for offshore umbilicals and flexible risers.

#### **DuPont™ Krytox®**

Highly stable, chemically inert lubricant for extreme environments.

#### **DuPont™ Kalrez®**

Perfluoroelastomer parts are field proven in highly aggressive sealing environments at temperatures as high as 325°C.

#### **DuPont™ Pipelon®**

A family of DuPont engineering polymer resins designed to serve the demanding field of polymeric pipe solutions for the oil and gas industry. The technology addresses today's demand for improved permeation resistance, higher temperature & pressure service, lighter weight and lower life cycle cost pipe.

#### **DuPont™ Vespel® CR-6100**

Metal replacement parts for oil refineries, petrochemical and power plants around the globe. Vespel® CR-6100 has replaced metal and other composite materials used for pump wear rings, throat bushings and line shaft bearings, helping users to increase pump reliability and performance.

Productivity



## Operations & capital projects consulting services

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### Process Safety Management

Process Safety Management or PSM is the application of management systems and controls (programs, procedures, audits, evaluations) in a way that process hazards are identified, understood, and controlled, so that process-related injuries and incidents are prevented.

### Sustainable Assets

Enabling clients to improve their project delivery and operating performance, through:

- Proven best practices to improve asset productivity and reliability
- Improved delivery, timing and performance of capital projects
- Team development
- Improved project leadership capability



Sci

DuPont is a key strategic partner helping to solve many of the Oil & Gas industry's most serious challenges in safety, the environment reliability & productivity.

## Utilizing science to drive innovation

Putting the science of DuPont to work for our customers has enabled us to develop a wide range of products specifically for the oil and gas industry. From lubricants that provide superior protection in the harshest of downhole environments, to specialist additives for enhanced oil recovery and environmentally-friendly bactericides, DuPont has innovative technologies and expertise which can help optimize your performance.



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**SAFETY**

We help you reduce air emissions, improve water quality and usage, formulate cleaner fuels and develop strategic environmental plans.

**ENVIRONMENT**

Our solutions help keep your operation working at peak efficiency, even in some of the most extreme operating environments.

**RELIABILITY & PRODUCTIVITY**

The Global Collaboratory is our vision for a virtual laboratory, where people can work together across companies, governments, borders and cultures to develop science-powered solutions that address the world's greatest challenges.

This is our way of working and we invite the world to join us.

**Welcome to The Global Collaboratory™**

To learn more, visit [dupont.com/collaboratory](http://dupont.com/collaboratory)

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# Cont

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*DuPont is a science company. Founded in 1802, DuPont puts science to work by creating sustainable solutions essential to a better, safer, healthier life for people everywhere. Operating in more than 70 countries, DuPont offers a wide range of innovative products and services for markets including agriculture, nutrition, electronics, communications, safety and protection, home and construction, transportation and apparel.*

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