



BASF PETRONAS Chemicals Sdn. Bhd.

Report 2018





Index

Welcome	3
JV Company Limited	4
Overview	7
Key data	10
Further information	11

About this Report

“BASF PETRONAS Chemicals Report 2018 - Including Toray BASF PBT Resin” is published annually as a concise document about the company’s development, progress and performance in regard to economy, ecology, and society. The reporting period for this publication is the financial year 2018. All data in the report are the combined 100% total from BASF PETRONAS Chemicals and 100% from Toray BASF PBT Resins, which is located at the BASF PETRONAS Chemicals site, without BASF Services.



Welcome

Message from the Managing Director

Dear friends and stakeholders,

I am delighted to present BASF PETRONAS Chemicals – Report 2018, which provides an overview of our commitments to all stakeholders: employees, customers, shareholders, authorities and the community where we operate.

2018 was a challenging year for BASF PETRONAS Chemicals. Our financial performance was impacted by delays during planned shutdowns, unexpected difficulties in ramping up our new plants, and uncertainties in the market environment.

However, we achieved several important milestones. We made progress in developing our safety culture, which was reflected in improved safety performance. We also ultimately achieved significant technical milestones at our new plants, improved our infrastructure and strengthened our technical capabilities.

In 2018, we embarked on our “Journey To The Top”: a strategic roadmap that will help propel the company to greater heights. We have defined our vision: to be the most reliable, competitive and preferred supplier of chemical products, contributing to the success and growth of our customers, stakeholders and our people. This is further reflected in our people development according to our “TOP Team” approach.

As in the past years, we collaborated with neighboring companies and local non-profit organizations on projects that support biodiversity and community development. This also included volunteer involvement of our employees for the society.

Building on our progress in 2018, with the spirit of TOP Team embraced by our people and continuous support from our stakeholders, we will be able to weather the storm and come out stronger and more resilient in the years to come.

We will strive to achieve an improved financial performance, better reliability and utilization of plant operations, along with excellent safety performance. I offer my warmest thanks for all the support received by BASF PETRONAS Chemicals, and I look forward to driving sustainability for future growth.

Best regards,

A handwritten signature in black ink, appearing to read 'Sven Crone'.

Sven Crone
 Managing Director
 BASF PETRONAS Chemicals Sdn. Bhd

BASF PETRONAS Chemicals Sdn. Bhd.

At a Glance

BASF PETRONAS Chemicals Sdn. Bhd. is a Malaysia-based joint venture between BASF and Petroliaam Nasional Berhad (PETRONAS), under its subsidiary PETRONAS Chemicals Group Berhad (PCG). Incorporated in 1997, the company operates an Integrated Verbund Site situated at the Gebeng Industrial Zone, Pahang. The company's share capital is 60% held by BASF and 40% by PCG. Key products include acrylic monomers, oxo products, butanediol, 2-Ethylhexanoic Acid, highly reactive polyisobutene and aroma ingredients.

The range of chemicals produced by BASF PETRONAS Chemicals meet the growing demand in various industries including plastics, adhesives, coatings, dyestuffs, automobile and industrial coatings, paper, diapers, water treatment, textile and leather.

A MYR1.5 billion (approx. \$500 million) integrated aroma ingredients complex, commenced in 2018, includes facilities to produce citral, citronellol and L-menthol. Aroma ingredients are used as flavors and

fragrances for the food and beverage, fabric and homecare, and healthcare industries.

BASF PETRONAS Chemicals operates a 2-Ethylhexanoic Acid (2-EHAcid) production plant with an annual capacity of 30,000 metric tons. 2-EHAcid is a chemical intermediate used as a compound, for example, in the production of synthetic lubricants as well oil additives. It is also used for functional fluids like automotive coolants, metal salts for paint dryers, plasticizers, stabilizers, catalysts and other applications in various industries including cosmetics.

In 2018, BASF and PETRONAS successfully started up a new world-scale production plant for highly reactive polyisobutene (HR-PIB) at BASF PETRONAS Chemicals. The plant, which is the first of its kind in South East Asia, has a total annual capacity of 50,000 metric tons of HR-PIB. HR-PIB is an important intermediate product for the manufacturing of high-performance fuel and lubricant additives, including additives for sludge prevention.



Night view of acrylics complex at Kuantan Verbund Site.

BASF PETRONAS Chemicals Sdn. Bhd.

Shareholders



About BASF

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 122,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Until December 31, 2018, our portfolio was arranged into four segments: Chemicals, Performance Products, Functional Materials & Solutions and Agricultural Solutions.¹ Since January 1, 2019, BASF's activities have been grouped into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions.

[Further information on BASF is available at www.basf.com.](http://www.basf.com)

¹ Excluding the oil and gas activities presented as discontinued operations

About PETRONAS Chemicals Group Berhad

PETRONAS Chemicals Group Berhad (PCG) is the leading integrated chemicals producer in Malaysia and one of the largest in South East Asia. It operates a number of world class production sites, which are fully vertically integrated from feedstock to downstream end-products. With a total combined production capacity of over 12 million metric tons per annum (mtpa), it is involved primarily in manufacturing, marketing and selling a diversified range of chemical products, including olefins, polymers, fertilizers, methanol and other basic chemicals and derivative products. Listed on Bursa Malaysia and with three decades of experience in the chemicals industry, PCG is established as part of the PETRONAS Group to maximize value from Malaysia's natural gas resources.

PCG is one of the top 10 companies in the FTSE4Good Bursa Malaysia (F4GBM) Index, out of 200 largest companies ranked by market capitalization. It is committed to ensuring that its business practices are in line with globally recognized standards for Environment, Social & Governance (ESG) practices.

[Further information on PCG is available at www.petronaschemicals.com.my.](http://www.petronaschemicals.com.my)

Members of the Board of Directors



Datuk Md Arif Mahmood
Chairman of the Board of Directors,
BASF PETRONAS Chemicals Sdn Bhd and
Executive Vice President and
Chief Executive Officer of Downstream, PETRONAS
(PETRONAS Group of Companies)



Datuk Sazali bin Hamzah
Managing Director / Chief Executive Officer,
PETRONAS Chemicals Group Berhad
(PETRONAS Group of Companies)



Hartwig Michels
President,
Petrochemicals Division, BASF SE
(BASF)



Dr. Ramkumar Dhruva (until June 2019)
(Succeeded by **Dr. Carola Richter** as of July 2019)
President,
South & East Asia, ASEAN and Australia/New Zealand
(BASF)



Dr. Sven Crone
Managing Director,
BASF PETRONAS Chemicals Sdn. Bhd.
(BASF)

Overview

In 2018, BASF PETRONAS Chemicals encountered a number of challenges which impacted financial performance. However, the company achieved key milestones in environmental protection, health, safety and social areas. We further developed our strategic roadmap with the launch of our “Journey To The Top”, a refreshed three-year roadmap to propel the company to greater heights.

Business development

In 2018, BASF PETRONAS Chemicals entered its 21st year of partnership, bringing together a vast amount of experience, innovation, technology and strategically located resources. Significant challenges during the year 2018 had a major impact on the overall financial performance, including delays and problems during planned shutdowns, unexpected problems in ramping up our new plants, as well as the uncertainties of the market environment.

In 2018, in line with our renewed focus on supporting the sustainable growth of our customers, our product stewardship team catered to a wide range of customers audits and visits both at our site as well as at our customers' premises. BASF PETRONAS Chemicals also leveraged the Smart Partnership Program with The Royal Malaysian Customs of Pahang to improve our logistics and supply chain support to customers.

We also demonstrated our commitment to meet our customers' needs by complying with various management system standards, including:

- ISO 9001:2015 Quality Management System standard
- ISO 14001:2015 Environment Management System standard
- OHSAS 18001:2007 Occupational Safety and Health Management System standard.

BASF PETRONAS Chemicals received Star K Kosher certifications for its aroma ingredients and 2-EHAcid products during 2018, as well as certification to the MS 1500 Halal standard and FSSC 22000 food safety management system certification. Our GC Mark Green Company certificate demonstrates that we succeed in minimizing our negative impact on the environment.

We commit to being the most reliable, competitive and preferred supplier of chemical products, contributing to the success and growth of our customers, our stakeholders and our people. Therefore, we have supported various external events, such as the World Halal Conference 2018, organized by the Halal Industry Development Corporation. Together with our parent company, BASF, we jointly sponsored the Asia Petrochemical Industry Conference, where key developments in the petrochemical industry were in focus in 2018.

Environmental protection, health and safety

A key area of focus in 2018 was the improvement of our contractors' awareness and understanding of current policies and procedures relating to “Permit To Work”, “Job Safety Analysis”, “Site Safety Briefing” and “Hazard Identification & Risk Assessment”, in order to reduce safety incidents from contractors and instill a safety culture mindset.

In 2018, we enforced Monthly Leading Indicator Reporting, to monitor specific process safety and occupational safety performances. To monitor the reporting is important to ensure all stakeholders take ownership to improve the safety performance.

In conjunction with BASF Global Safety Days 2018 under the theme “Understand Risk, Take Action” BASF PETRONAS Chemicals conducted a series of activities to increase risk awareness among employees and contractors in regard to their daily working environment and intensified the awareness for properly handling these risks.

BASF PETRONAS Chemicals takes a three-pronged approach to responsible use of energy, focusing on efficient energy generation, reducing energy consumption in our production facilities, and developing products and technologies for increased efficiency in our use of available energy. In 2018, steam consumption increased by 25% and fuel consumption increased by 32%. This was a result of an increase in fuel consumption from central power plants and boilers compared to the previous year, due to the additional steam demand of our new production complex and the increase in production overall.



Management team members at Global Safety Days 2018

Greenhouse emissions and air pollutants increased slightly due to the full operation and utilization of our complexes. We evaluate risks arising from air emissions and mitigate potential risks through available relevant controls. With the help of a Continuous Emissions Monitoring System, we continued to analyze emissions gases online. This system enables a live data feed, 24 hours a day, for faster response and mitigation. This also ensures more accurate reading and monitoring of emissions gases. Despite the increase in 2018, we remain well below the limit provided by environmental authorities. We will continuously reduce emissions by optimizing processes and raw materials.

Employees and society

BASF PETRONAS Chemicals has identified the “TOP Team” approach as the company’s desired working culture, and in 2018 this approach has come to its full implementation. We have rolled out tools including the Supervisory Leadership Development program and the Leadership Excellence through Awareness and Practice program, which take place throughout the year. We also updated our remuneration strategy, offering competitive and differentiated remuneration to attract and retain talent, and offered programs to support employee engagement. In September 2018, we celebrated with over 2,200 participants from 500 of our employees with their family members in a BASF PETRONAS Chemicals Family Day. Management briefings and employee dialog sessions are also held quarterly at both the Kuantan site and the Shah Alam headquarters, as an effective platform for management to share the company’s latest news and for employees to share their feedback.



“Beat As One” Family Day 2018

In the aim to foster knowledge-sharing in the fields of engineering, technology and science, and to further contribute to the enhanced training and competency of the university’s graduates and to recruit best talents for BASF PETRONAS Chemicals, a Memorandum of Understanding was signed between the company and Universiti Malaysia Pahang (UMP). The collaboration activities with UMP in 2018 include technical knowledge sharing sessions and student volunteering programs.

Social engagement at BASF PETRONAS Chemicals focuses on the United Nations Sustainable Development Goal #15 – Life on Land. In line with this focus, in collaboration with ecoCare Centre owned by the Malaysian Nature Society (MNS), we organized a Mangrove Education Program in November 2018 at Kerteh, Terengganu. About 150 participants from local schools, as well as teachers and students, along with student volunteers from a local university, Universiti Malaysia Terengganu, participated in the activity. Additionally, an annual mangrove planting activity which aimed to conserve and protect our mangrove ecosystem from further degradation was held in July 2018, whereby 100 volunteers including employees and families, MNS representatives, residents and local community members of Chendor, Pahang, undertook a joint effort in riverbank clean-up, releasing of turtle hatchlings, and planting a total of 1,500 mangroves sapling at Rimbun Dahan Turtle Hatchery, Chendor.



2018 Mangrove Education Program at ecoCare Centre Kerteh, Terengganu

An annual hosting site visit for students and authorities was held in 2018, with the inaugural Kids Fun Day at BASF PETRONAS Chemicals. This event was a platform to create awareness of chemistry in daily life, BASF PETRONAS Chemicals brand, sustainability and corporate social responsibility initiatives, with a guided site tour and customized activities to educate our target audience's understanding on the site safety, production systems, environmental protection measures and more.

In 2018, we collaborated with neighboring companies and associations in the Gebeng Industrial Area in the annual Balok River Adoption Program (BRAP). The activity for the year, the choral speaking competition program, is aligned with the initiatives in promoting awareness and efforts to safeguard the environment by creating awareness among students on the importance of conserving water and maintaining a clean river eco-system with BRAP. This collaboration reflects the Verbund approach in our community work, where we combine the know-how and contacts of external organizations with our own resources to maximize our outreach.



Kids' Fun Day at BASF PETRONAS Chemicals

Key data

		2018	2017	2016
Financial Results				
Sales	million €	709	625	470
Employees (as of December 31)				
Number of employees		986	917	904
BASF employee age structure				
	%			
Up to and including 25 years		4.3	3.6	5.5
Between 26 and 39 years		52.1	52.3	51.8
Between 40 and 54 years		38.9	40.6	39.7
55 years and older		4.7	3.5	3.0
Occupational Safety				
Lost-time injury rate (BASF employees, leased personnel and contractors)	Per 200,000 working hours ¹	0.10	0.08	0.03
Fatalities (total)		0	0	0
Environment				
Emissions to air				
Greenhouse gas emissions	Metric tons of CO ₂ equivalents	805,609	680,730	671,752
Air pollutants (without CH ₄)	Metric tons	789	715	437
Water				
Emissions to water: Organic substances (CoD)	Metric tons	203	176	122
Emissions to water: Nitrogen	Metric tons	1.3	0.8	2.1
Emissions to water: Heavy metals	Metric tons	0.36	0.14	0.11
Water supply	Million cubic meters	3.2	2.4	2.1
Water used for production	Million cubic meters	0.49	0.49	0.43
Water used for cooling	Million cubic meters	330	248	165
Water supply by source				
Surface water	%	0	0	0
Groundwater	%	0	0	0
Drinking water	%	100	100	100
Waste				
Waste (total amount)	Metric tons	19,399	10,271	9,164
Recycling and thermal recovery	%	40	56	67
Disposal of waste				
Incineration	%	36	22	12
Landfill	%	10	20	20
Underground Storage	%	0	0	0
Energy				
Electricity consumption	MWh	413,002	358,990	337,326
Steam consumption	Metric tons	2,764,197	2,198,642	2,165,368
Fuel consumption (Central powerplants and boilers)	MWh	1,461,012	1,107,362	1,045,973

¹ Hours worked by BASF employees, temporary employees and contractors. We previously reported on the number of lost-time injuries per one million working hours worldwide (BASF and temporary employees). The 2016 and 2017 figure have been adjusted based on 200,000 working hours.

² Total number of waste increased due to the disposal of wastewater as scheduled waste. We disposed of hazardous waste according to the regulatory requirements of the Department of Environment, Malaysia. Non-hazardous waste, along with waste categorized under "special waste management", is disposed of at the Jarangau-Jabot landfills.

Further information

Contact

Corporate Office

BASF PETRONAS Chemicals Sdn Bhd (451307-K)
Shah Alam Office:
2, Jalan Astaka U8/87, Bukit Jelutong, Seksyen U8, 40150
Shah Alam, Selangor, Malaysia.
Tel: +60 3 7841 2200
Fax: +60 3 7846 6624
E-mail: info.service@basf-petronas.com.my
Website: www.basf-petronas.com.my

Kuantan Integrated Chemical Site

BASF PETRONAS Chemicals Sdn Bhd (451307-K)
Kuantan Production Site:
Jalan Gebeng 2/1, Kawasan Perindustrian Gebeng, 26080
Kuantan, Pahang, Malaysia.
Tel: +60 9 585 5000
Fax: +60 9 583 4623

 For more information, please visit www.basf-petronas.com.my or follow our Facebook page. You can find also this and other BASF publications online at www.basf.com

Follow us



facebook.com/basfpetronaschemicals



plus.google.com/+basf



twitter.com/BASF



linkedin.com/company-beta/2116070/



on.basf.com/basfpetronaschemicals