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Cover Photo: Biodiversity at Ludlow Tuart Forest after rehabilitation, Western Australia

General note: This document provides a 2016 update to the 2013 Cristal Sustainability Report presented in our website, where a full overview of our reporting against GRI G4 guidelines is provided. The reporting methodology is in accordance with the GRI G4 “Core” guidelines.

The reporting period for this report is calendar year 2016. This is the latest data available at the time of the preparation of this document. Only sections with updated data for the above-mentioned year are included in this report. Other sections are referred to in the initial report.

Thank you for your interest in our sustainability performance.

Please send questions or comments to sustainability@crystal.com.

WELCOME FROM OUR EVP

Dear Readers,

Over the past year, we have continued our journey of environmental, social and economic sustainability building on the efforts made in previous years. To support these efforts, Cristal has revised its commitments to provide additional emphasis on sustainability. These commitments are published on our website: www.cristal.com.

To translate these commitments into actions, the Cristal management team reviewed and endorsed its strategic plan. The plan provides guidance to our manufacturing and functional teams on the key sustainability milestones for the next five years.

In 2016, we focused on ensuring that we incorporated all our facilities in sustainability reporting; benchmarking our sustainability performance; identifying areas of improvement; and challenging our manufacturing sites to further enhance performance. This year's report includes information from our newly acquired pigment plant in China in addition to our mining and mineral separation plants. Starting from 2016, we are monitoring monthly our key sustainability indicators at our manufacturing sites against targets.

These efforts have resulted in improvements in our overall sustainability score by a world-leading platform for supplier sustainability rating. The latest rating continues to place Cristal on the highest quartile for businesses in a similar category and benchmarks Cristal's environmental performance at the top of the list for this category.

In 2017, we continue to drive improvements at our manufacturing sites and are working with our suppliers to evaluate their sustainability performance. By the end of 2017, we aim to engage our top suppliers, in terms of purchase spending, in sustainability efforts.

We are also continuing our active contributions in areas where we operate not only from an economic perspective, but also from a social and environmental perspective. We are engaged in advance level discussions with our customers to ensure we are partners in sustainability for their products.



Dr. Christian Günther
Executive Vice President
Titanium Strategic Business Unit
TASNEE GROUP

1 ORGANIZATION

Cristal continues to be one of the largest producers of titanium dioxide and a leading producer of titanium chemicals. We are the largest merchant titanium chemicals producer and the world's leading supplier of ultrafine titanium dioxide products. We are also a producer of mineral sands.

After acquiring Jiangxi Tikon Titanium Company in China in 2015, we now operate eight titanium dioxide manufacturing plants in seven countries and on five continents.

The following table shows the distribution of our full-time employees by age structure.

	2016	2015
Employees (FTE)	3,277	3,549
Training hours	206,353	158,812
Age structure (%)		
<30	496 (15.1%)	636 (17.9%)
30 – 50	1,778 (54.3%)	1,900 (53.5%)
>50	1,003 (30.6%)	1,013 (28.5%)

In March 2015, a transformation occurred with the transition of National Industrialization Company (Tasnee), Cristal's majority shareholder, from a holding entity to an operational entity. Tasnee assumed the management and leadership of Cristal and moved its entities to sustainable businesses capable of withstanding typical downward cycles in the business. A huge part of that process included reorganization and a disciplined organizational structure which remained consistent. The unfortunate part of that exercise was the loss of employees through reorganization into a leaner, more efficient, organization.

The following table shows the distribution of our full-time employees by gender.

Employee Category	Gender	Full-Time Employees	Percentage
Management (Level T6 and above)			
	Female	24	10.9%
	Male	196	89.1%
Employees (Non managerial level)			
	Female	334	11.0%
	Male	2,713	89.0%
Worker			
	Female	358	10.96%
	Male	2,909	89.04%
Total		3,277	100

2 THIS REPORT

The reporting period for this document is calendar year 2016. The first report was issued in 2015 for the calendar year 2013 according to GRI standard's "Core" option. Cristal is planning to update the sustainability report on a yearly basis.

This report includes only updated information for the year 2016. Detailed content on sustainability is provided in the initial report which can be accessed through our web site through the following link:

http://www.cristal.com/news-room/Documents/Sustainability_Report_Interactive.pdf

The contact person for questions regarding this report, or feedback and suggestions for our sustainability program is Chris Wiernicki, General Manager - Health, Safety and Environment for Cristal, who can be reached at sustainability@cristal.com.

3 ECONOMIC PERFORMANCE

Economic impact of our operations includes direct payroll and benefits; supplier spend, which is more than twice our direct payroll, and its impact on those companies; capital projects and construction employment; the indirect multiplier effect of these expenditures upon the communities where we operate; tax payments and direct charitable donations to communities, and the economic benefit realized by our customers through their use of our products. Our net sales in 2016 were approximately \$1.74 billion.

Economic performance is one of the pillars of sustainability. While our economic performance has a positive effect in the communities where we operate, our continued commitment to exemplary environmental, health, safety and sustainable performance is what allows our continued operation.

4 MARKET PRESENCE

The market presence comprises both a local presence within communities where we have operations and an industry presence in the international marketplace. It is managed as a growth objective at both levels, with development plans proposed, reviewed and implemented through formal company funding processes. Success of initiatives is monitored at

both local and company levels through financial performance metrics, and adjustments are made as needed. In 2016, Cristal continued to be one of the largest producers of titanium dioxide products globally.

The following table shows amount and distribution of our raw material spend:

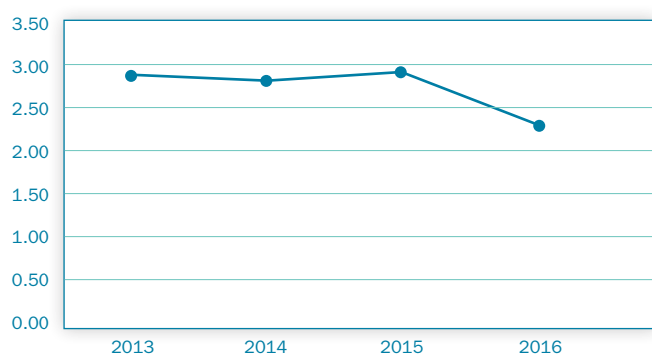
	2016	2015
Asia/Pacific		
% of spend within region suppliers*	100%	97%
Total number of suppliers to the region	1,259	1,237
Number of local suppliers from within the region	1,236	1,210
Europe		
% of spend within region suppliers	70%	71%
Total number of suppliers to the region	1,394	1,439
Number of local suppliers from within the region	1,366	1,402
Middle East		
% of spend within region suppliers	48%	46%
Total number of suppliers to the region	598	623
Number of local suppliers from within the region	422	413
North America		
% of spend within region suppliers	46%	54%
Total number of suppliers to the region	748	768
Number of local suppliers from within the region	723	743
South America		
% of spend within region suppliers	87%	80%
Total number of suppliers to the region	52	49
Number of local suppliers from within the region	50	46
China		
% of spend within region suppliers	92%	100%
Total number of suppliers to the region	392	418
Number of local suppliers from within the region	389	418

5 MATERIALS

The following table provides information on the four year period from 2013-2016 in absolute number (in millions of tons) and per ton of product. This report incorporates data from all our pigment and mineral separation plants across the world. The significant increase in the quantity of material used is attributed to inclusion of information from mining facilities. The reduction in the ratio of raw materials usage per ton of product in 2016 is driven by raw material optimization programs by our manufacturing sites and by increased production rates compared to 2015. It is important to consider variations in the number of production facilities in 2016 compared to previous years due to the increase in the number of facilities and inclusion of mining activities.

Year	2016	2015	2014	2013
Raw Material used (M tons)	3.10	1.95	2.18	2.27
Raw Material used (t/t All products)	2.31	2.90	2.83	2.88

Raw Materials/Product (t/t)



Indicator of raw material consumption per unit of product shows a significant reduction in 2016

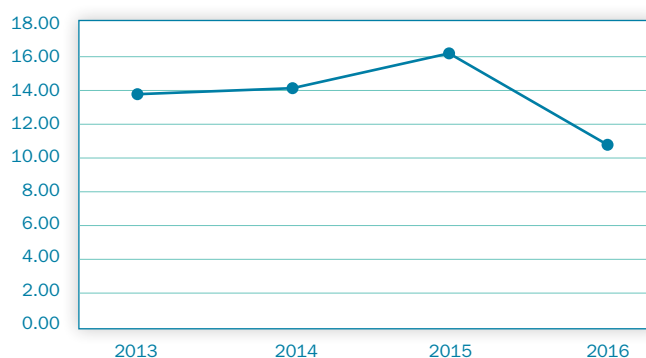
6 ENERGY

The following table provides information on the four year period from 2013-2016 in absolute numbers (million GJ) and per ton of product. It also includes the energy generated from renewable sources in millions of GJ. This report incorporates data from all our pigment plants, mines and mineral separation plants across the world. The reduction in the energy intensity in 2016 is driven by energy efficiency programs at our manufacturing sites and increased production rates compared to 2015. It is important to consider variations in the number of production facilities and the inclusion of mining sites in 2016 compared to previous years.

The average energy intensity for our pigment plants are well within the range indicated in the European Commission reference document on best available techniques for the TiO₂ sector. This applies for both sulfate and chloride processes.

	2016	2015	2014	2013
Absolute in M GJ	14.53	10.93	10.92	10.94
Energy Intensity (GJ/t All Products)	10.81	16.22	14.19	13.87
Energy from Renewable Sources (M GJ)	0.14	0.15	0.14	0.14

Energy Intensity in GJ/t

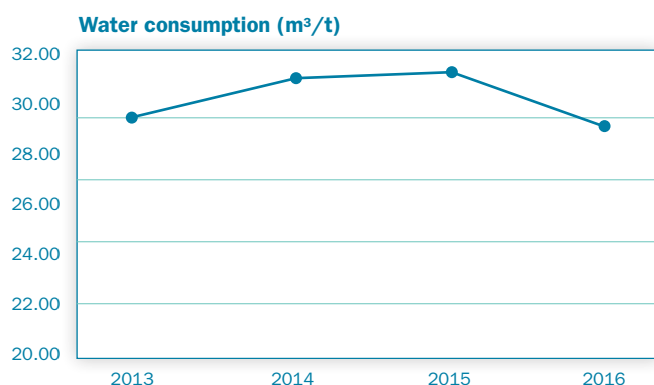


Indicator of energy intensity shows a significant reduction in 2016

7 WATER CONSUMPTION

The following table provides information on the four year period from 2013-2016 in absolute numbers (million cubic meters) and per ton of product. Year 2016 reporting incorporates data from all our pigment and mineral separation plants across the world. The reduction in the water consumption per ton of product in 2016 is driven by water efficiency programs at our manufacturing sites and increased production rates compared to 2015. It is important to consider variations in the number of production facilities in 2016 compared to previous years and inclusion of mining sites.

	2016	2015	2014	2013
Water Used (M m ³)	24.98	20.92	23.76	23.07
Water Used (m ³ /t All products)	20.60	31.06	30.88	29.26



Indicator of water consumption per unit product shows a major reduction in 2016

8 BIODIVERSITY

In 2016, we had over 150 hectares in rehabilitation in our Brazilian and Australian mining sites, however much of this area will require several more years to fully achieve the agreed end uses. Much of this is in the process of recovery, but is not yet fully rehabilitated. At our mines in Brazil, the surface area of disturbed land was reduced by 22% compared to 2015.

Cristal continues to be a leader in rehabilitation activities as recognized by local authorities in Australia and Brazil. Our SHE policy was updated to ensure we maintain at least this level of leadership consistently.

All Sites	2016	2015	2014
Total land disturbed and not yet rehabilitated in Ha (A: Opening Balance)	1908	1966	1876
Total amount of new land disturbed within reported period (B)	288	187	213
Total amount of land newly rehabilitated within the reporting period to the agreed end use (C)	153	245	123
Total land disturbed and not yet rehabilitated in Ha (D= A+B-C)	2043	1908	1966

9 EMISSIONS

The following table provides information on the four-year period from 2013-2016 in absolute numbers (in million tons). This report incorporates data from all our pigment and mineral separation plants across the world for Scope 1 and 2 emissions. It is important to consider variations in the number of production facilities in 2016 compared to previous years.

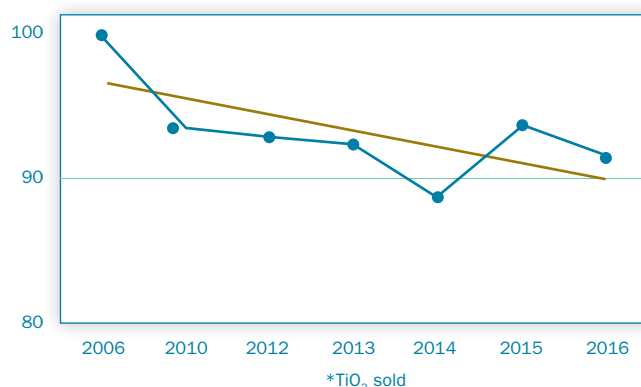
The graph provided shows the carbon footprint reductions achieved by Cristal across the company from the baseline year of 2006 through 2016 expressed as the average kg of CO₂ produced for each kg of TiO₂. The basis of the calculation is Scope 1, 2 and 3 emissions from “Cradle to Gate.” Year 2016 incorporates data for all TiO₂ pigment production sites. The carbon footprint calculation methodology is developed by the Titanium Dioxide Manufacturing Association (TDMA) according to the EU PEF Method.

Cristal is committed to continue reducing the carbon footprint of our business through improved manufacturing efficiency, waste reduction, improved emissions controls, alternative energy and other methods that support all of the areas of sustainability.

CO ₂ emissions in M tons	2016	2015	2014	2013
Direct emissions (scope 1)	0.58	0.54	0.62	0.56
Indirect emissions (scope 2)	1.03	0.91	0.86	0.82

CF Per kg of TiO₂ – All Plants

2006 = 100



Indicator of Carbon Footprint shows reduction in 2016

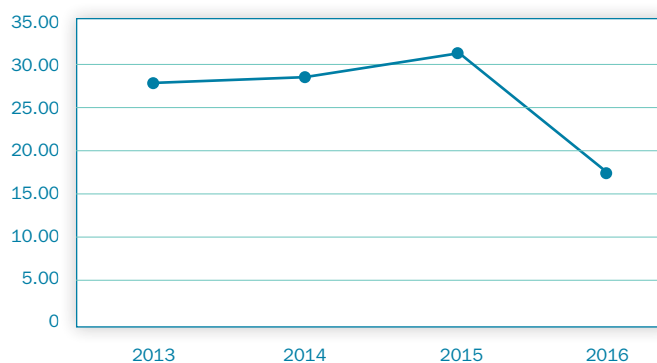
In 2016, recycling activities at our US site has contributed to a reduction of around 54 tons of CO₂ equivalent according to certificates received from recycling companies. This is just one of the certificates Cristal has received globally.

10 EFFLUENT

The following table provides information on the four year period from 2013-2016 in absolute numbers (in million cubic meters) and per ton of product. This report incorporates data from all our pigment and mineral separation plants across the world. The reduction in the water discharge per ton of product in 2016 is driven by increased production rates compared to 2015 and water efficiency programs by our manufacturing sites. It is important to consider variations in the number of production facilities in 2016 compared to previous years.

	2016	2015	2014	2013
Water Discharge (M m ³)	23.82	20.80	21.84	21.90
Water Discharge (m ³ /t All products)	17.73	30.87	28.38	27.77

Water Discharge (m³/t – TiO₂ All Products)



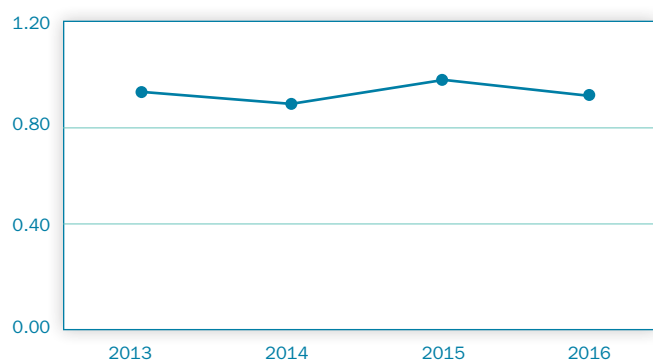
11 WASTE

The following table provides information on the four year period from 2013-2016 in absolute numbers (in million tons). The increase in 2016 total numbers is due to the fact that it incorporates additional values from mines and mineral separation plants. It is important to consider variations in the number of production facilities in 2016 compared to previous years when looking at the quantities of waste generated and ratio of waste compared to production.

The majority of non-hazardous waste is the mineral residue from the manufacturing process. Some of the manufacturing locations have the ability to beneficially reuse this material, while others dispose it of in a dedicated landfill.

	2016	2015	2014	2013
Waste (kilo tons)	1,122	664	676	737
Waste (t/t All products)	0.93	0.99	0.88	0.93

Waste (t/t All Products)



The following table provides a breakdown of waste in terms of hazard classification and final disposal option.

Quantity of Waste (kilo tons)	2016	2015	2014
Hazardous waste	145	99	140
Recycling	0.46	0.22	0.40
Treatment	144	98	140
Landfill	0.02	0.00	0.00
Non-hazardous waste	1152	666	677
Recycling	5.17	0.34	0.18
Treatment	1.06	0.00	0.00
Landfill	1145	665	676

12 ENVIRONMENTAL COMPLIANCE

Our manufacturing locations are subject to environmental permits, regulations and standards. Compliance is monitored by internal and external groups. Any non-compliances are investigated and corrective action plans are defined, implemented, tracked and validated as effective. The following table shows the number of non-compliance incidents in 2016.

	Non Compliance Incidents (#)	Fines (in USD)
Europe	0	0
Latin America	0	0
Middle East	4	0
North America	3	0
Asia/Pacific	2	0
Worldwide	9	0

No significant fines or sanctions for non-compliance with environmental laws and regulations occurred in 2016.

13 EMPLOYMENT

Our workforce is the key to our success in all areas. Cristal is an effective and growing business – a leader in our field. What sets us apart, however, is our culture. We think of our people as family members and we treat them as such; taking a warm and caring approach to everything from employee safety to career development.

We respect our people and we hold ourselves accountable for our actions and our performances. In this way, we own all our successes and build valued relationships throughout our business and beyond. Both direct employees and contractors are valued and are included in workflow processes and monitored through our human resources and contractor management processes. Any employment or contractor issues that arise are reviewed at the management level for the group involved – plant management for locally controlled issues or corporate level for broader issues.

Approximately 3,300 persons were employed across Cristal operations worldwide by the end of 2016.

14 LABOR/MANAGEMENT RELATIONS

The application of our policies and implementation of our mission and vision occurs at the worker level and the relationship between the worker and their management is fundamental to our business.

This applies whether workers are represented by a collective bargaining agreement or not. At most of our locations, workers are represented. Agreements with unions include conditions of employment including: normal wages, premium pay, vacations, holidays, benefit plans including insurance and retirement plans, and other aspects of labor/management relations. There have been no strikes at Cristal locations since 1998.

In 2016, the company revised its “equal opportunity” policy to renew our continuing commitment to recruit, hire, promote, re-assign, compensate and train persons in all job classifications without regard to race, color, religion, sex, age, national origin, disability, sexual orientation or any other legally protected classification. This policy is supported by a group of policies and procedures that includes code of conduct and business ethics and a policy on preventing workplace discrimination, harassment, bullying and violence.

15 OCCUPATIONAL HEALTH AND SAFETY

Our safety vision is to prevent all workplace injuries, illnesses and environmental impact through our Journey to Zero program focusing on achieving a world-class safety culture across the organization. Operating safely is an integral part of our business philosophy: “An unsafe ton is an unwanted ton,” a value repeatedly set forth by the Cristal leadership.

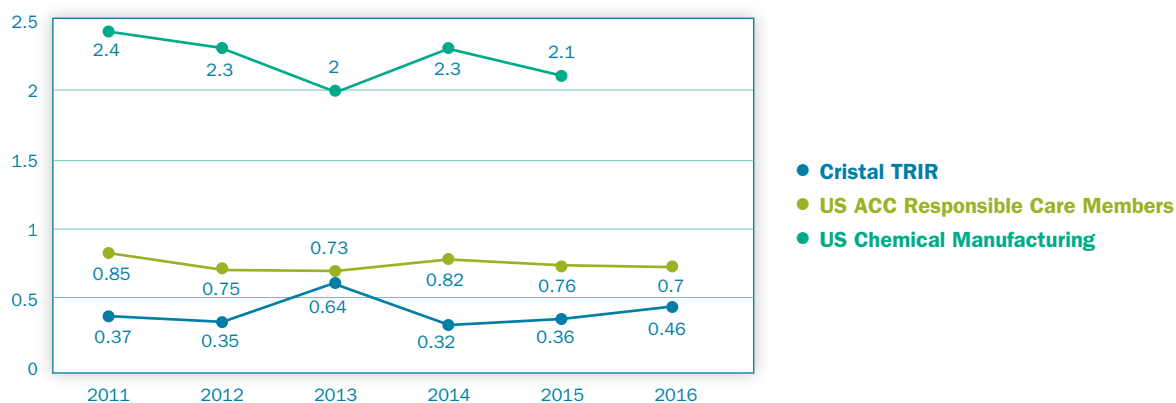
The Total Recordable Incidence Rate (TRIR) measures the rate of recordable workplace injuries and illnesses, as defined by the US Occupational Health and Safety Administration (OSHA), normalized per 100 workers per year. Recordable injuries and illnesses include all work-related deaths, illnesses, and injuries that result in a loss of consciousness, restriction of work or motion, permanent transfer to another job within the company, or that require some type of medical treatment other than first-aid treatment. The TRIR is calculated by multiplying the number of recordable injuries in a calendar year by 200,000 (which represents 100 employees working 2,000 hours per year) then dividing

this value by the total man-hours actually worked in the year. Our TRIR for 2016 slightly increased compared to 2015. However, our TRIR level remains at the lower tier compared to similar industries.

The following table shows the process safety incident rate from 2015-2016. These very low rates are driven by robust process safety management systems at our sites.

	2016	2015
Process Safety Event Rate	0.000085	0.000075

Incident rate every 200,000 working hours (according to the criteria of the OSHA)



Indicator of Employees Total Recordable Injury Rate (TRIR) shows an increase in 2016

16 TRAINING AND EDUCATION

Company-wide, an average of 48 hours of training per employee was provided in 2016, with an increase of around 13% compared to 2015. This includes training on safety, environmental and health protection topics, plus workplace and personal development training. The development training is discretionary time spent on skills development, as opposed to training that is mandated by a legal requirement. Approximately one training hour in every two is now spent on development activity compared to one hour in every six in 2013. Actual development hours per employee rose from seven hours in 2013 to 18 hours in 2016 maintaining the same level as 2015.

A sustained focus on employee development is fast becoming part of the fabric of Cristal. All supervisors and above levels in the organization receive a documented annual performance and career development review. The majority of those also receive a mid-year review, which focuses predominately on future-forward action and development. For 2016, the spend per employee on training was US\$408. The following table shows the breakdown of employees training and development by region.

	Training hours / Employee	Development hrs./Employee	Training cost / Employee (\$US)
APAC	53	18	443
US	62	29	327
Europe	37	24	420
Middle East	17	3	467
Brazil	73	17	380
Average All Areas	48	18	408

17 COMMUNITY SUPPORT

In each location where we operate, we actively interact with the local communities, neighboring industries and local schools, colleges and universities. Given the large number of programs and individual locations, it is not practical to share all of our community support activities around the world. In this section, we share with the readers examples of community support activities from different locations in 2016.

In 2016, Cristal Mining West welcomed 38 students and teachers to Ludlow, which is located within the previously mined and now revegetated Tuart Forest. All enjoyed a short walk on the newly developed walking trail and gained an insight into what's involved in a rehabilitation program, while enjoying a picnic lunch. The students (Bushrangers Cadets) are part of the Geographe Education Support Center which



Ludlow, Western Australia – Students enjoying some rest during the visit

is a specialist school co-located at the Busselton Senior High School. They assisted Cristal Mining in making 150 possum dreys, which were placed within rehabilitation sites and donated to local community groups. *(Note: this news was published by the Chamber of Minerals and Energy of Western Australia. The text above was extracted and revised from this publication.)*



Western Australia – Cristal Workshop assisting with preparation of possum dreys

COMMUNITY SUPPORT continued

Our TiO₂ pigment production plant in Bahia, Brazil has a leading role in community support in the region. Cristal is an active contributor to the “Reading Club Project” which aims to help children in the local community to improve their literacy levels by engaging them in social practices of reading and writing. Cristal partners with Areias, Jaua and Arembepe Resident Associations to organize these events. This project started 10 years ago.



Bahia Reading Club – Photos from 2016 events



The Bahia plant has also created the “Open Doors Program” to promote greater interaction between the company and the local community. Visitors get the chance to witness day-to-day activities in an industrial environment and interact with our professionals. Around 300 community members visit our plant every year.



Bahia Open Door Program – Photos from 2016 events



COMMUNITY SUPPORT continued

Cristal's Stallingborough, UK plant is a long-term supporter of the charity Young Enterprise which aims to make the connection between school and the world of work, enabling young people to develop the knowledge and attitudes they need to succeed in their future careers, building on key business, communication and interpersonal skills. In 2016, Cristal supported the program by providing a business

mentor for a group of students who teamed up to make their own company. They had to make all the decisions about their company, from deciding on the name and product to creating a business plan, managing the student company finances and selling to the public at trade fairs, all supported by a Cristal business mentor.



Participants in Young Enterprise



Community team at
Cristal Suite



Also in Stallingborough, UK, Cristal was the proud sponsor of a new treatment suite at the local hospice, which is a charity center providing care and treatment for adults and children living with life-limiting illnesses. The center provides respite care as well as full-time residential care for the terminally ill. The hospice also provides grief and bereavement support services. The new Cristal suite is part of a new extension to the center which has enabled them to improve their offering and provide extra care services to patients and their families.

18 ANTI-CORRUPTION

Our global locations are assessed for various risks, including risks related to corruption, on an ongoing basis. Cristal's anti-corruption policies and procedures are communicated to governance board members and employees. Cristal has a system in place for the training of board members and employees regarding its anti-corruption policies and procedures. Such training is accomplished, depending upon the intended audience, either in-person or via online training. There have been no confirmed incidents of corruption during the reporting period of 2016.

In October 2016, our anti-corruption policy was updated and communicated to all employees. All employees must ensure that their actions comply with the laws of the country in which they are doing business. The Company does not condone any form of bribery; commercial, domestic, or foreign and prohibits improper payments to both government officials and non-governmental parties, including private entities and individuals. Also, business integrity is embedded in the company's core values.

19 COMPLIANCE

We are committed to comply with all relevant regulations in countries where we operate. This commitment is documented as part of the company's core values. To support compliance, the company issued a documented "non-retaliation policy" in 2016 to empower employees to report non-compliances if observed; to maintain an "open door policy" at all levels of management to encourage employees to report problems or concerns; and to enforce disciplinary action against retaliation acts in response to reporting.

No non-compliances with laws and regulations relating to provision and use of products or services were identified during 2016.

<http://www.cristal.com/safety-health-and-environment/Pages/sustainability-reports.aspx>



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This document does not constitute a specification. Product specifications are available on request.

LFG 12/17