1 General economy with reference to the plastics industry

The ifo business climate index remains unchanged in October, see www.ifo.de/ifogeschaeftsklimaindex. The ifo business climate index is staying put at 94.6. Business owners assess their current business situation to be less good than in the previous month. However, their expectations have improved. The German economy is stabilising.

In the manufacturing sector, the downwards trend in the business climate has been stopped for the time being. The index is rising here. This is due to much less pessimistic expectations among industrial companies. But they assess the current situation to be slightly worse. Capacity utilisation fell by 1.3 percentage points, to 82.6 per cent. For the first time since the third quarter of 2013 it is therefore below its long-term average of 83.7 %.

The press release from Plastics Information Europe of 5 November 2019 on the 5th KI Group Summit at K 2019 has the title "Transition to the Circular Economy - Changes to Plastics Markets thanks to Recycling", see

www.kiweb.de/ g/pdf/kiweb/pm/PM 5 KI Group Summit K 2019 November 2019 d.pdf. The top international fair, K 2019 in Düsseldorf, did show one thing very clearly: there will be radical changes in the plastics industry in the years ahead. Plastics recycling is becoming more important at ever increasing speeds and is a challenge for the industry. "We have to conserve our resources if we want to maintain our wealth, and we have to get China, India and the USA on board," appealed Ton Emans, President of the Plastics Recyclers Europe Association (PRE) to around 250 visitors. Plastics recycling will thus become a global task, which will require measures guickly in view of the rapidly rising population and the costs will be in the billions.

2 The primary plastics market

810-860

850-900

1140 ± 186

PVC tube grade

PVC film/cables

Average Price

2.1 Standard plastics

In October, the EUWID standard plastics price index had average quotes of 1140 €/t, which had barely changed in comparison to the previous month (1144 €/t), see Table 1. The change in the average price for October is solely due to the price fall of 20 €/t for PS. The quotes for all other standard plastics were unchanged. In a year-on-year comparison of the EUWID standard plastics price index, it can be seen that the average quotes from October 2019 (1140 €/t) were 191 €/t lower than those of the previous year (1331 €/t). The mood in the markets for standard plastics remains gloomy.

Since September 2018, the price for packaging PET, then at 1480 €/t, has fallen continuously to the current 1105 €/t. And this means that within the period, packaging PET has fallen by a total of 375 €/t. In October 2019 packaging PET is quoted at 1105 €/t and thus 15 €/t lower than in the previous month (1120 €/t).

| Prices in €/t | October 19 | September 19 | August 19 | July 2019 | June 2019 |
|-------------------------|------------|--------------|------------|------------|------------|
| LDPE film grade | 1010- 1080 | 1010- 1080 | 1050- 1120 | 1050- 1120 | 1170- 1270 |
| LLDPE film grade | 1020- 1110 | 1020- 1110 | 1060- 1150 | 1060- 1150 | 1160- 1270 |
| HDPE injection moulding | 1120- 1180 | 1120- 1180 | 1180- 1240 | 1180- 1240 | 1260- 1320 |
| HDPE blow moulding | 1140- 1200 | 1140- 1200 | 1180- 1240 | 1180- 1240 | 1260- 1320 |
| PS crystal clear | 1290- 1350 | 1310- 1370 | 1250- 1310 | 1250- 1310 | 1340- 1400 |
| PS high impact | 1390- 1450 | 1410- 1470 | 1350- 1410 | 1350- 1410 | 1440- 1500 |
| PP homopolymer | 1210- 1260 | 1210- 1260 | 1290- 1340 | 1290- 1360 | 1370- 1440 |
| PP copolymer | 1260- 1310 | 1260- 1310 | 1340- 1390 | 1340- 1410 | 1420- 1490 |

830-880

870-920

1170 ± 182

830-880

870-920

1172 ± 184

860-920

910-960

1254 ± 199

Standard plastics prices according to EUWID over the past five months, listed in €/t. Table 1:

810-860

850-900

1144 ± 191

2.2 Technical plastics

In October 2019 technical plastics (2523 €/t) were 71 €/t lower than in June 2019 (2594 €/t), see. Table 3. The average price in October 2019 (2523 €/t) was as much as 521 €/t lower than that of August in the previous year (3044 €/t). Price falls were seen in October 2019 in: PMMA by 50 €/t, PC by 100 €/t, POM by 20 €/t, PA 6 by 50 €/t, PA 66 by 213 €/t and PBT by 50 €/t. According to the Plastixx TT index from KI Plastics Information Europe, see www.kiweb.de, the mean annual index value for 2019 is at 1430 points. Only in 2016 was a lower index value, for 1341, reached. The falling prices for technical plastics are explained by the continuing worsening economy, especially in the motor industry.

| Table 2: | EUWID quotes for technical prices, which are published every two months, over the last six |
|----------|--|
| | months; prices in €/t. |

| Prices in €/t | October 2019 | August 2019 | June 2019 | April 2019 |
|---------------------|--------------|-------------|-------------|-------------|
| PMMA crystal clear | 3050 - 3250 | 3100 – 3300 | 3200 - 3400 | 3200 - 3400 |
| ABS natural | 1610 – 1660 | 1610 – 1660 | 1610 – 1660 | 1670 – 1720 |
| ABS w/b | 1710 – 1760 | 1710 – 1760 | 1710 – 1760 | 1770 – 1820 |
| ABS coloured | 2310 – 2460 | 2310 – 2460 | 2310 – 2460 | 2370 – 2520 |
| PC crystal clear | 2550 – 2850 | 2650 - 2950 | 2950 - 3150 | 3000 – 3200 |
| PC GF-reinforced | 2750 – 3050 | 2850 - 3150 | 3150 - 3350 | 3200 - 3400 |
| POM natural | 1900 – 2000 | 1900 – 2000 | 1920 – 2020 | 2000 – 2100 |
| PA 6 natural/black | 2000 – 2200 | 2050 - 2250 | 2250 - 2450 | 2250 - 2450 |
| PA 6 GF-reinforced | 2100 – 2150 | 2150 – 2200 | 2350 – 2400 | 2350 – 2400 |
| PA 66 natural | 3550 – 3700 | 3750 – 3950 | 3950 – 4150 | 4050 – 4250 |
| PA 66 GF-reinforced | 3400 – 3500 | 3600 – 3700 | 3800 – 3900 | 3900 – 3950 |
| Average Price | 2523 | 2594 | 2723 | 2736 |

3 Secondary plastics markets in the plasticker price index

The plasticker internet platform, see http://plasticker.de, publishes quotes on an hourly basis. The present market report indicates the final monthly prices. It is only possible to represent the preliminary prices for the month of the report, in this case November 2019; they will not become definitive until early December. The two quotes stated for November 2019 below indicate only an interim situation, see the left-hand column in Table 3 and Table 4.

3.1 plasticker: Standard plastics

In October 2019 the average price for standard plastics is 495 €/t and thus 18 €/t lower than in the previous month (513 €/t), see. Table 3. The average price for October 2019 (495 €/t) was 50 €/t below that of the previous year (545 €/t). The following price changes were more than $\pm 40 €/t$: LDPE baled goods -60 €/t, PP baled goods -150 €/t, and PVC_P regrind -50 €/t. The price falls for PP baled goods are subject to the reservation of lower supply. The October price index records slightly improved demand for plastic in comparison with the previous month.

At 670 €/t LDPE granulate is stuck at its lowest quote for 5 years. September 2018 there has been a continuous fall for PET regrind, from 400 €/to 320 €/t in August 2019, and since then the PET quotes have remained stable at the lower price level.

Overall, standard plastics tended to more price falls in November. At 483 €/t, the preview of the November quotes shows an average price that is 12 €/t lower than in the previous month (495 €/t). The November price index, 15.11.2019, shows weak demand for plastic to date.

| | Nov. ⁶ 19 | October 19 | Sept. 19 | Aug. 19 | July 19 | Oct. 18 |
|-------------------------------------|----------------------|------------|----------|---------|---------|---------|
| HDPE regrind ¹ | 560 | 570 | 560 | 600 | 620 | 570 |
| HDPE regranu- lates ⁵ | 790 | 810 | 800 | 870 | 850 | 890 |
| LDPE bale goods ² | 90* | 180 | 240* | 240* | 200 | 240 |
| LDPE regrind ¹ | 500 | 510 | 480 | 500 | 540* | 580 |
| LDPE regranu- lates ⁵ | 660 | 670 | 670 | 680 | 700 | 770 |
| PP bale goods ³ | 170 | 140* | 290* | 370 | 240* | 150 |
| PP regrind ¹ | 560 | 550 | 570 | 570 | 580 | 540 |
| PP regranulates⁵ | 820 | 820 | 830 | 880 | 870 | 810 |
| PS regrind ⁴ | 610 | 620 | 610* | 630 | 630 | 670 |
| PS regranulates ⁵ | 850 | 850 | 880 | 760 | 910 | 980 |
| PVC_P regrind ¹ | 290 | 320* | 370* | 350* | 390* | 390 |
| PVC_U regrind ¹ | 390 | 360 | 380* | 530* | 480* | 450 |
| PET bale goods | 150 | 190 | 160* | 200 | 180* | 180* |
| PET regrind mixed colours | 320 | 340 | 340 | 320 | 330 | 410 |
| Average Price | (483) | 495 | 513 | 536 | 537 | 545 |

Table 3: Standard plastics price according to plasticker; listed in €/t.

*: Supply figure too low to attain statistical significance; ¹: equivalent to the grade "post-industrial mixed colours"; ²: equivalent to K49; ³: equivalent to K59; ⁴: equivalent to "standard, mixed colours"; ⁵: equivalent to the grade "regranulates, black"; ⁶: preview (may be amended by additional quotes)

3.2 plasticker: Technical plastics

In October 2019 the average price for technical plastics in plasticker is 1132 €/t and thus 93 €/t lower than in the previous month (1225 €/t), see. Table 4. A comparison of the average prices from October 2019 (1132 €/t) with those of the previous year (1301 €/t) shows a difference of as much as 169 €/t. The October price index shows hesitant demand for plastic, which has improved slightly in comparison to the previous month. Individual plastics show very marked changes, including price changes of more than ± 70 €/t: PC regranulates -170 €/t, PA 6.6 regranulates -130 €/t and POM regranulates -650 €/t. An unusually big price fall was seen with POM!

The quotes for ABS regrind are falling continuously and are now only at 1120 €/t. PC regranulates has reached a 5-year low. PA 6.6 regranulates has been continuously falling in value since April 2019. At 600 €/t POM regrind has reached a low that was last surpassed in November 2017 at 590 €/t. The prices for POM regranulates are like a rollercoaster, for example the last time POM regranulates were quoted lower, at 380 €/t, was January 2018.

At 1178 €/t, the preview of the November quotes of 15.11.2019 shows an average price that is as much as 46 €/t higher than in the previous month (1132 €/t). The November price index is showing subdued demand for plastic.

| | Nov. ⁶ 19 | Oct. 19 | Sept. 19 | Aug. 19 | July 19 | Oct. 18 |
|---------------------------------------|----------------------|---------|----------|---------|---------|---------|
| ABS regrind | 610 | 600 | 610 | 660 | 670 | 620 |
| ABS regranu- lates ⁵ | 1030 | 1120 | 1230 | 1120 | 1070 | 1440 |
| PC regrind | 960 | 940 | 940 | 930 | 930 | 840 |
| PC regranulates⁵ | 1660 | 1470 | 1640 | 2020 | 1890 | 2370 |
| PBT regrind | 540 | 450 | 510 | 540 | 500 | 460 |
| PBT regranulates | 1640 | 1590 | 1570 | 1710 | 1820 | 1790 |
| PA 6 regrind | 820 | 830 | 810 | 790 | 810 | 880 |
| PA 6 regranu- lates ⁵ | 1740 | 1700 | 1760 | 1760 | 1820 | 1920 |
| PA 6.6 regrind | 930 | 880 | 870 | 860 | 870 | 870 |
| PA 6.6 regranu- lates ⁵ | 1930 | 2010 | 2120 | 2200 | 2270 | 1980 |
| POM regrind | 640 | 590 | 590 | 580 | 590 | 650 |
| POM regranu- lates ⁵ | 1640 | 1400 | 2050 | 1860 | 1780 | 1790 |
| Average Price | (1178) | 1132 | 1225 | 1253 | 1252 | 1301 |

Table 4: Technical plastics price according to plasticker; listed in €/t.

4 Evaluation of the secondary plastic markets

4.1 Standard plastics

Sales of recycled plastics have stalled in the last quarter. Competitively priced virgin grades are exerting pressure on the use of recycled materials. Products such as rPET detergent bottles or shower gels in recycled polyolefin bottles are a ray of hope for the use of recyclates. Increasing numbers of manufacturers of packagings intend to replace a proportion of the virgin grade with recyclates.

In October 2019, a comparison of the data for standard plastics from EUWID with plasticker shows that the quotes for plastic waste are falling in both price indexes. And the level of price fall, which is an average 16 €/t in EUWID, is confirmed with an average 18 €/t in plasticker. Both price indices show a subdued demand for plastic.

In comparison to the previous month, PE post-industrial waste is quoted at an average 8 €/t lower than in the previous month in EUWID, PP post-production waste 17 €/t lower and PS post-production waste 31 €/t lower. As far as PE post-user is concerned, the quotes fell by 9 €/t. The prices of PVC post-industrial waste have fallen by an average 31 €/t and PVC window frames by 12 €/t.

Only very small amounts of plastic waste are still exported. And this applies equally to exports from Germany to European markets, Turkey or the Far East (Vietnam, Thailand, India, PR China, Taiwan). This situation is made even more acute by the fact that Germany and the Netherlands are an important hub for European plastic waste. Or, to put it another way, increasing amounts of plastic waste are accumulating in Germany for which there are hardly any recycling options or incineration capacity.

Ever more disposal companies are now refusing to accept plastic waste from commerce and industry. The flow of these plastics into incineration plants is stalling due to insufficient capacity. The flow of plastic waste from commerce and industry to recycling is therefore very limited. One of the reasons for this this is the small quantities collected. Furthermore, the available grades of these quantities fluctuate so much that continuous recycling is scarcely possible.

⁵: equivalent to the grade "regranulates, black"; ⁶: preview (may be amended by additional quotes)

4.2 PET Recycling

PET recycling is still under pressure. Although falling bottle prices are pleasing, the price falls for virgin grade are also impacting the recyclates. Although the supply of used beverage bottles is falling, it is still sufficiently high. The October quotes for used PET returnable bottles are 10 €/t lower than in the previous month for PET clear, by 10 €/t for PET mixed and by 5 €/t for PET coloured, see the EUWID price index for used PET returnable bottles.

5 Explanation on the price quotes

A detailed discussion with information of price indices for virgin grades and waste plastics as well as precursor products can be found in EUWID Recycling and Disposal see www.euwid.de, or in EUWID Plastics www.euwid-kunststoff.de. EUWID: No guarantee for any of the prices.; prices ex station. As a rule, the prices quoted refer to quantities in excess of 20 tons.

The quotes for secondary prices, which are updated on an hourly basis, can be calculated using the price lists that are derived from the quotations published in the raw material exchange plasticker, see www.plasticker.de. The prices listed in this index are quoted without reservation - as the majority of the quotes submitted are not necessarily equivalent to the sales prices. Plasticker offers the quality grades regrind and regranulates both as virgin materials and as secondary goods. The term 'bale goods' refers to waste plastics only. Furthermore, plasticker does not distinguish between the following grades: transparent, mixed colours or colour-separated. Therefore, the information provided by plasticker may indicate different market behaviour than the prices quoted by EUWID

Bonn, Thursday, 5. December 2019 byse

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