

***Case No COMP/M.4927 -  
CARLYLE / INEOS / JV***

Only the English text is available and authentic.

**REGULATION (EC) No 139/2004  
MERGER PROCEDURE**

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Article 6(1)(b) NON-OPPOSITION  
Date: 20/12/2007

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COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 20/12/2007

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PUBLIC VERSION

MERGER PROCEDURE  
ARTICLE 6(1)(b) DECISION

To the notifying party

Dear Sir/Madam,

**Subject: Case No COMP/M.4927 – CARLYLE/ INEOS/ JV  
Notification of 16/11/2007 pursuant to Article 4 of Council Regulation  
No 139/2004<sup>1</sup>  
Publication in the Official Journal of the European Union No. C282,  
24.11.2007, p. 29**

1. On 16 November 2007, the Commission received a notification of a proposed concentration pursuant to Article 4 of Council Regulation (EC) No 139/2004 of 20 January 2004 ("the Merger Regulation") by which the undertaking INEOS Silicas Limited ("IS", United Kingdom) belonging to the INEOS Group ("INEOS") will be combined with PQ Corporation (PQ, USA) belonging to Carlyle Group ("Carlyle"), into a single company which will constitute a joint venture within the meaning of Article 3(1)(b) of the EC Merger Regulation.
2. After examination of the notification, the Commission has concluded that the notified operation falls within the scope of EC Merger Regulation and does not raise serious doubts as to its compatibility with the common market and with the EEA Agreement.

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<sup>1</sup> OJ L 24, 29.1.2004 p. 1.

## **I. THE PARTIES**

3. INEOS is a global manufacturer of petrochemicals, specialty chemicals and oil products. **IS** is a manufacturer of inorganic speciality chemicals including silicates, zeolites and silicas.
4. Carlyle is a private equity firm with 80 investee companies in a wide range of sectors. PQ, which is controlled by Carlyle, is a manufacturer of inorganic speciality chemicals.

## **II. CONCENTRATION**

5. On 11 October 2007 Carlyle, PQ, INEOS and several INEOS affiliates entered into a Purchase Agreement, by which PQ, IS and certain other assets held by the INEOS Group will be combined in a joint venture. The joint venture will be ultimately owned 54 % by Carlyle and 36 % by INEOS. Following the completion of the Purchase Agreement, the JV will enter into a Stockholders' Agreement governing, *inter alia*, the management of the JV business. In particular, the Stockholders' Agreement grants INEOS veto rights over the JV's budget. As a result, both Carlyle and INEOS will be able to exercise decisive influence over the JV.
6. The JV will be full-function. It will combine two existing independent and well-established companies. It will operate independently from the parent companies, performing the full range of activities normally performed by companies in the industry concerned.
7. Thus, the proposed operation constitutes a concentration within the meaning of Articles 3(4) and 3(1)(b) of the EC Merger Regulation.

## **III COMMUNITY DIMENSION**

8. The combined aggregate worldwide turnover of the undertakings concerned exceeded € 5,000 million in 2006 (Carlyle: €18,409 million, INEOS: €30,155 million) and each of Carlyle and INEOS had a Community-wide turnover of more than €250 million (Carlyle: [...] INEOS: [...]). Neither Carlyle, nor INEOS achieves two-thirds of its turnover in one and the same Member State. Thus, the proposed transaction has Community dimension.

## **IV. COMPETITIVE ASSESSMENT**

### **(a) Relevant product markets**

9. The parties are both active in the manufacture of a range of inorganic chemical products, used principally in the production of detergents, in the production of pulp/paper and as a feedstock for derivative chemical products.
10. Their activities overlap in the production of sodium, potassium and magnesium silicates and in the production of silica gel. These products may be further subdivided by presentation and/or application as described below.

(i) Silicates

11. **Sodium silicate** is a chemical combination of sodium dioxide and silicon dioxide, which is supplied in a wide range of grades (differentiated, for example, by purity, alkalinity and their solid content) and in various product forms (aqueous, lump glass, metasilicate, milled glass, powders and granules (spray dried)). It is principally used in the manufacture of detergents, pulp/paper and other industrial applications. The parties contend that despite the existence of numerous possible grades, forms and applications, there is a single relevant product market for sodium silicate.
12. **Magnesium silicate** is an absorbent which is used to purify polyols. It may also be used by pharmaceutical companies in the manufacturing of antacids. The parties submit that the relevant product market comprises all applications of magnesium silicate (polyol refining, antacids, etc).
13. **Potassium silicate** is a niche product used in surface coatings and applications where fire resistance is important. The parties submit that there is one overall relevant potassium silicate product market for all such applications.
14. Respondents to the Commission's enquiry agreed that sodium, magnesium and potassium silicates, on the basis of their different characteristics, prices and applications constituted three separate markets.
15. As far as sodium silicate is concerned, some respondents to the Commission's market investigation indicated that switching between different forms of sodium silicate could incur additional costs. However there was general agreement amongst respondents that the various product presentations are functional and economic substitutes.

*Conclusion*

16. The Commission therefore considers that there are individual relevant product markets for sodium silicate, magnesium silicate and potassium silicate and that these markets are not further subdivided.

(ii) Silicas

*(ii)a Introduction*

17. Silicas are specialty chemical products which are produced through the reaction of sodium silicate and a mineral acid or carbon dioxide. Silicas are classified according to their method of preparation.
18. Precipitated silica is produced by the acidification of a sodium silicate solution with a mineral acid or carbon dioxide. Precipitated silica is principally used in the manufacture of rubber and for food, healthcare and personal/oral care products.
19. Silica gel is also produced by the acidification of a sodium silicate solution with a mineral acid or carbon dioxide. The mixture forms a hydrosol which is then allowed to set (either on a moving belt, or in tubs) forming a mass (called a "hydrogel"). Silica gels are used in a wide range of applications, including as desiccants, for surface coatings, for beer stabilization (also called "chill proofing") in the brewing industry, in food and healthcare products and as supports for polyolefin catalysts.

20. Colloidal silica, also known as silica sol, is produced by pumping a sodium silicate solution through an ion exchange column to produce a silica suspension. Colloidal silicas are used for silicon wafer polishing, as CMP agents<sup>2</sup>, as a binder for castings and refractories, as a retention aid for paper, for beer and wine clarification, and in the manufacture of rubber and coatings.
21. Each of these three types of silica requires different manufacturing processes and equipment and are used for different applications. Thus they are not substitutable from either the supply or the demand side.
22. As far as precipitated silica is concerned only IS produces this product and as it has only a small market share ([0-10%] at EEA level) this product will not be further considered.
23. Neither IS nor PQ produces colloidal silica. Two Carlyle portfolio companies produce colloidal silica and have a combined EEA market share of [20-30%]. In this situation, it is not necessary to further consider colloidal silicas.
24. While IS produces and markets silica gels for a wide range of applications in Europe, PQ supplies silica gels only for brewing (beer gel) and polyethylene catalysts and catalyst support applications. Therefore, only these two applications need to be considered in the present decision.

*(ii)b Beer gel*

25. Beer gel is a derivative product of sodium silicate used for beer 'stabilisation', to prevent beer from becoming cloudy. According to the parties it is directly substitutable with polyvinyl polypyrrolidone (PVPP). The parties contend that, in addition, there are a number of other technologies that may be used to achieve the same result including tannic acid, enzymes, polysaccharides, precipitated silicas, silica sol and a cold filtration process.
26. Cloudiness in beer is caused by a reaction of proteins and polyphenols in the beer. The removal of either or both will prevent this cloudiness. Beer gel removes the proteins leaving the polyphenols, the converse is the case for PVPP. Therefore, the functional effects of beer gel and PVPP are the same as far as beer stabilisation is concerned.
27. The Commission's market investigation has shown that there is no essential difference in the use of either beer gel or PVPP in the brewing industry. The stabilizers are added to the beer after the beer fermentation process is complete, and at the end of the brewing process are removed by filtration. The 'in production' costs of the two stabilisers are comparable, since the price of PVPP is approximately ten times higher than that of beer gel, but the amount needed for the same quantity of beer is about ten times less.
28. Large European breweries use both beer gel and PVPP. Brewers switch from one product to the other periodically. There are even examples of brewers using a different stabilizer for the same beer brand brewed in different plants.

*Conclusion*

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<sup>2</sup> Chemical-mechanical planarization or polishing agents (often called "CMP Agents") are used in the manufacture and polishing of semiconductors.

29. On the basis of the above the Commission considers it likely that the relevant product market for beer stabilisation includes both beer gel and PVPP. However, the product market definition may be left open as the proposed operation will not raise competition concerns whether the relevant market is beer gel alone or beer gel and PVPP.

*(ii)c Silica gel polyethylene catalysts and catalyst supports*

30. Silica gel is used to support the catalyst in the manufacture of polyethylene by low pressure gas or slurry processes. Silica gel is used to almost exclusively to support chromium catalysts. Other catalysts including Ziegler Natta (titanium), zirconium, hafnium, late transition metals and metallocene can also be used to produce polyethylene.

31. The silica gel for catalyst applications can be supplied uncoated or already coated with the catalyst. Uncoated material is coated by either by the petrochemical company producing the polyethylene or by an intermediate catalyst supplier. The parties supply a substantial majority of their material in the coated form (...%) and for the purposes of this decision coated and uncoated silica gel used for catalysis on polyethylene production can be considered together.

32. There are according to the parties two types of silica catalysts, 'generic' and 'high performance' each of which constitutes a separate relevant product market. The parties argue that as different production processes are used in the manufacture of generic and high end silica gel, generic uses a cheaper water based method while the high end process is solvent based. As a result the production cost of high end silica polyolefin catalysts [\$25-35/kg] is considerably higher than generic catalysts (about [\$5-10/kg]). Furthermore for particularly demanding application such as pipes and blow moulding high end catalysts are necessary.

33. The results of the Commission's investigation into this issue are not completely conclusive. Although a majority of respondents agrees that there are two distinct markets a significant minority make no such distinction. It is clear from the replies that a catalyst has to be designed to produce the specified product in a given production facility. Changing the type of catalyst used from chromium to another metal or vice versa is difficult if it is possible and that most consumers require their catalyst to be qualified (that is tested in place and shown to produce the desired results).

34. In the present case, it is not necessary to define the product market as on any reasonable product market definition the proposed operation will not raise competition concerns.

**(b) Relevant geographic markets**

*(i) Silicates*

35. For sodium and potassium silicates the parties submit that these products may be economically transported several hundred kilometres, and that this characteristic, in conjunction with the number and geographic location of silicate producers in Europe, means that the relevant geographic market is EEA-wide.

36. For magnesium silicate the parties submit that the relevant geographic market is global. They claim that all suppliers ship their products to most other regions of the world and that transport costs (maximum 10% of sale price) are not a constraint.

37. The Commission's market investigation has confirmed the geographic market definitions proposed by the parties.

*(ii) Silicas*

*(ii)a Beer gel*

38. The parties claim that the relevant geographic market for beer gel is at least EEA-wide since transport costs are relatively insignificant (around 5%) in relation to the value of the gel. PQ ships beer gel from its plant in North America to various European countries.

39. The Commission's investigation confirmed the parties' proposed geographic market definition

*(ii)b Silica gel polyethylene catalysts and catalyst supports*

40. In relation silica gel for polyethylene catalysts and catalyst support the parties submit that relevant geographic market for these products is world-wide, because their value in relation to transport costs makes intercontinental deliveries economic. Even for generic catalysts the transport costs are unlikely to exceed 2% or 3% of the delivered price. For the more expensive high performance catalysts the cost of transport is negligible.

41. The Commission's investigation has confirmed the parties' proposed geographic market definitions

**(c) Assessment**

*(i) Silicates*

42. The table below shows the parties market shares for each affected silicate product on the appropriate geographic market.

Product	Market size (EUR)		Shares		
	Global	EEA	PQ	IS	Combined
Sodium silicate	-	[300-350]m	[15-25%]	[0-10%]	[25-35%]
Potassium silicate	-	[10-20]m	[15-25%]	[0-10%]	[20-30%]
Magnesium silicate	[30-50]m	-	[0-10%]	[0-10%]	[5-15%]

43. As regards sodium silicate, although the JV will become EEA market leader with [25-35%], while the market will remain fairly fragmented, the JV will face competition from competitors with substantial market shares including Cognis [10-20%], Woellner [10-20%] and IQE, Rudniki, and FMC Foret [0-10%]. As sodium silicate is a commodity product customers should have no difficulty in switching to alternative suppliers.<sup>3</sup>
44. In the EEA market for potassium silicate, a comparatively small market (EEA 12m €), the combined entity will face several strong competitors including Van Baerle [15-25%], Cognis and Woellner [15-25%]. Again as potassium silicate is a commodity product customers should have no difficulty in switching to alternative suppliers.<sup>4</sup>
45. As regards the worldwide market for magnesium silicate, the parties will have a market share of only [5-15%] while the clear market leader would be Dallas with [>70%], followed by Shangyu Jiehua [0-10%], Kyowa [0-10%], and Van Baerle [0-10%].
46. On the basis of the above the proposed operation will not significantly impede competition on the markets for sodium, potassium and magnesium silicates.

#### (ii) Silicas

47. On an overall market for silicas the parties EEA market share would be about [0-10%] (IS [0-10%] and PQ[0-10%]). If silica gels are considered alone the new entity's share would be [20-30%] (IS [15-25%] and PQ [0-10%]). The situation on the possible markets where the parties' activities overlap, beer gel and silica polyethylene catalysts and catalyst support and discussed in more detail below.

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<sup>3</sup> This conclusion is consistent with the Commission's notice on Guidelines on the assessment of horizontal mergers under the Council regulation on the control of concentrations between undertakings, OJ C31, 31.3.2004 p. 5.

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(ii)b *Beer gel*

48. The parties' shares of the EEA beer stabiliser market are as follows:

Product market	Market shares		
	PQ	IS	Combined
Beer gel	[20-30%]	[10-20%]	[30-40%]
Beer gel + PVPP	[10-20%]	[10-20%]	[20-30%]

49. If the relevant product market is considered to be beer gel alone the parties will have a share of [30-40%]. They will face competition from Stabifix Brauereri Technik [30-40%] and Grace Davison [5-15%]. Furthermore any attempt to raise prices would also be constrained by the possibility for brewers to switch to PVPP.
50. In a market including both beer gel and PVPP the market leader is ISP with [25-35%], the parties would be the second player with [20-30%]. Competition would also be provided by other competitors including Stabifix [20-30%], BASF [10-20%], Grace Davison [0-10%], Begerow [0-10%] and Erbsloeh [0-10%].
51. A major European brewer switched from IS to [a competitor] as a supplier of beer gel in September this year for its operations in one major Member State. This resulted in a loss for IS of about [0-10%] of the beer gel segment.
52. Furthermore, beer stabiliser customers wield significant countervailing buying power; such customers include both large brewers, such as Inbev, Scottish and Newcastle, SABMiller, Carlsberg and Heineken. The combined entity will also face competition from independent beer gel distributors such as Stabifix, which latter purchase in bulk from manufacturers and sell to both large and small brewers.

Conclusion

53. On the basis of the above, the proposed operation will not significantly impede competition on the market for beer gel or alternatively on the market for beer gel and PVPP.

(ii)c *Silica polyethylene catalysts and catalyst support*

54. Only PQ produces high performance silica gel catalysts and catalyst supports and does not produce generic silica gel catalysts and catalyst supports. IS produces generic silica gel catalysts and catalyst supports and has no solvent based production. However a small amount of its generic production is blended with high performance catalysts for a particular high performance application. The technology in question is used in only two plants worldwide (accounting for less than 5% of global polyethylene production).

**Table 2 Silica gel catalysts and catalyst support worldwide merchant market shares %**

Company	High performance catalysts	Generic Catalysts	All Catalysts
Grace Davison	[>60]	[>70]	[>70]
PQ	[30-40]	0	[10-20]
IS	[<5]	[20-30]	[10-20]
PQ + IS	[30-40]	[20-30]	[20-30]
Basell	[<5]	0	[<5]
Fuji	0	[<5]	[<5]

55. In a global merchant market for high performance silica gel catalysts and catalyst supports the parties will have a combined market share of [30-40%] if the generic material produced by IS and blended is considered to be a high performance catalyst. The increment is only [<5%] and IS cannot be regarded as a serious competitor in high performance catalysts as it has no solvent based production. If the IS supply is considered to be part of the market for generic catalysts then the operation changes nothing in the market structure. The capital investment (around \$50 million according to the parties) required to enable IS to enter the high performance market make it extremely unlikely that IS would enter the market unless supported by a major petrochemical company who could guarantee an outlet for the production. The operation would not therefore eliminate a potential competitor.
56. On a global merchant market for generic silica gel catalysts and catalyst supports only IS is present with a market share of [20-30%]. The proposed operation would not therefore change the structure of the market. The new combined entity will face competition from the market leader Grace Davison with a [>70] market share. While the capital investment necessary for PQ to enter this market is less, about \$10 million the size of the market ([\$40-50] million) would make market entry risky unless sponsored by a customer. . In this situation PQ cannot be regarded as a likely entrant into the generic market.
57. If on the other hand, there is a single relevant market for silica gel for polyethylene catalyst support the parties would have a combined share of about [20-30%] of the global market. The main competitor on the merchant market is Grace Davison with a share of [>70]. In this single relevant market, PQ and IS are not each others closest substitute. As explained above they would operate in different segments of the market and in each case the closest substitute would be Grace Davison<sup>5</sup>.
58. The proposed operation is unlikely to result in co-ordinated effects as Grace will be very much larger than the combined entity. It should be noted that PQ currently competes aggressively with Grace Davison in the high performance segment and IS in the generic segment and that both have been increasing their market shares at the expense of Grace.

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<sup>5</sup> This conclusion is consistent with the Commission's notice on Guidelines on the assessment of horizontal mergers under the Council regulation on the control of concentrations between undertakings, OJ C31, 31.3.2004 p. 5.

59. The polyethylene business is highly concentrated itself and the customers for silica gel based catalyst and catalyst supports are very large multinational petrochemical companies. They possess significant market power when negotiating catalyst supplies. If necessary they can sponsor (and/or seek the help of the process licensor to sponsor) the entry of new catalyst suppliers. Lukoil is understood to have sponsored the entry of a silica gel manufacturer in Belarus.
60. None of the respondents to the Commission's questionnaires has expressed any serious concerns about the effect of the operation on the markets. One respondent considers that the operation might be pro-competitive as it combines two weak players and may allow the new entity to dedicate sufficient resources (particularly research and development, to become a more effective competitive restraint on Grace Davison.

### *Conclusion*

61. On the basis of the above the proposed operation will not significantly impede effective competition in the common market or in a substantial part of it whether there is a single relevant product market encompassing all silica gel polyethylene catalysts and catalyst support or separate relevant product markets for generic and high performance catalysts and catalyst supports.

#### *(iii) Vertically related markets*

##### *(iii)a Downstream of sodium silicate*

62. The parties' share of EEA merchant sales of sodium silicate is about [20-30%]. The combined entity will be active on a number of downstream markets. These are magnesium silicate [0-10%], calcium and aluminium silicates [<5%], detergent zeolites [20-30%] precipitated silica [0-10%], silica sol [20-30%], beer gel [30-40%] and polyethylene catalysts and catalyst support [20-30%] depending on market definition. The only relationships where the market shares are 25% or more on both the upstream and downstream markets is that between beer gel and sodium silicate and sodium silicate and polyethylene catalysts and catalyst support.
63. However any attempt by the combined entity to restrict supplies of sodium silicate to competitors would be unsuccessful. Beer gel and polyethylene catalysts and catalyst support silica gels only account for less 2% of the use of sodium silicates so that other manufacturers of sodium silicate could easily meet the very small additional demand if the combined entity tried to restrict supplies of sodium silicate to competitors<sup>6</sup>.

### *Conclusion*

#### *(iii)b Other vertical relationships*

64. The other vertical relationships arising from the proposed operation are between hydrocracking catalysts [20-30%] and petroleum refining (<1%); polyethylene catalysts

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<sup>6</sup> This conclusion is consistent with the Commission's notice on Guidelines on the assessment of non-horizontal mergers under the Council regulation on the control of concentrations between undertakings, <http://ec.europa.eu/comm/competition/mergers/legislation/nonhorizontalguidelines.pdf>

[20-30%] polyethylene production [10-20%]; and silica gel [20-30%] and surface coatings for leather (<1%). In two of the above relationships the parties market share will be  $\geq 30\%$  however as the shares on the downstream markets are well below 30% the combined entity and its parents would not have incentives to restrict supplies to its downstream competitors.<sup>7</sup>

### Conclusion

65. In view of the comparatively modest upstream market shares and the low shares downstream these vertical relationships arising from the proposed operation will not significantly impede effective competition in the common market or in a substantial part of it.

#### *Customer foreclosure*

66. The combined EEA merchant purchases of PQ and IS of sodium silicate represent less than 1 % of total EEA merchant purchases. Both PQ and IS self-supply practically all the sodium silicate used by their downstream operations. Specifically, PQ does not purchase any sodium silicate for use as a feedstock and PQ has very limited purchases of sodium silicate only in Scandinavia (amounting in 2006 to EUR [...] million). Therefore no sodium silicate producers can be dependent on the parties for their sales of this product.

#### (iii)c Conclusion on vertically related markets

67. On the basis of the above the proposed operation will not significantly impede effective competition in the common market or in a substantial part of it.

### **V.CONCLUSION**

68. For the above reasons, the Commission has decided not to oppose the notified operation and to declare it compatible with the common market and with the EEA Agreement. This decision is adopted in application of Article 6(1)(b) of Council Regulation (EC) No 139/2004.

For the Commission

*signed*

Neelie KROES

Member of the Commission

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<sup>7</sup> This conclusion is consistent with the Commission's notice on Guidelines on the assessment of non-horizontal mergers under the Council regulation on the control of concentrations between undertakings, <http://ec.europa.eu/comm/competition/mergers/legislation/nonhorizontalguidelines.pdf>