

2ND AFERA TAPE COLLEGE

On the 7th and 8th of April the Afera Tape College was held for the second time after its premiere last year in Brussels. Reading the list of visitors held a surprise in store: More than 115 participants from over 18 countries had come to the conference, which can best be described as an "international training event", an increase of attendance by more than a third in comparison to the previous year! A brilliant success, especially considering that this event is being held in a time of strict travel expense budgets and generally high cost awareness in the business community. However, "Afera" represents much more than mere "further training", namely high-ranking expertise in the adhesive tape and label industry and networking on the highest level.

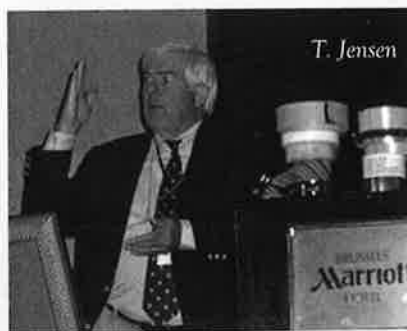
Moderated by *L. Jacob* (ExxonMobil Chemical Europe, Brussels, Chairman AFERA Technical Committee), *T. Jensen* (Jensen & Associates, U.S.A.) opened with his "Tape Overview". After a general definition ("What is an adhesive tape") the author presented background information on the various types of adhesive tape and their areas of use, subsequently turning to the utilised adhesives, their characteristics and components (backbone polymers, bonding resins). Remarks on the physical testing methods and application problems rounded off the topic. – *C. Donker* (Eastman Chemical Middelburg, NL) then introduced one of the main components of adhesive tape resins with "The Chemistry of Tackifying Resins". The large matter groups of rosin, terpene and hydrocarbon resins were discussed in regard to their origin, their chemical synthesis and their spectrum of properties. Tolerance with various backbone polymers, heat stability, colour fastness and the effect of the molecular weight were discussed and in conclusion presented a summary of critical parameters. – Water-based technologies play a dominant role since product manufacturers and users incorporate environmental aspects into their considerations. Thus the presentation by *J. Türk* (BASF AG, D) was on the topic "Coating Technology for water based adhesives". Based on the pilot project installations which currently can achieve speeds of up to 1,500 m/min, several of the commercially utilised project systems were introduced; from "Comma"

and "Mayer bar" to roll and curtain coating to the slit nozzle. Criteria for the perfect coating and the formulation of a framework for acrylic based aqueous PSA systems rounded off the lecture. – A "text-book" insight into the world of acrylic



adhesives was presented by *D. Pierson* (Rohm and Haas, U.S.A.) with his "Introduction To Acrylic Pressure Sensitive Adhesives". After a short introduction on the applications for such systems a market overview was presented – acrylic systems compared with SIS / SBS types – which showed the strong dominance of the latter in the water based area. The growth rates are very impressive, which in the case of acrylics clearly surpass those of other backbone polymers in all areas and with a world market volume of close to 150,000 t (in 2002) have altogether turned out twice as high. Furthermore, the advantages and disadvantages of both matter groups were presented and the chemical and formulation details of the acrylics were elaborated on in detail.

Headed by *C. Donker* (Eastman Chemical



Middelburg, NL) *T. Jensen* (Jensen & Associates, U.S.A.) began the second session with the topic "Tape Backings". An overview of the various common materials (textile, paper, plastic, metal, foam) was presented and their properties were dis-

cussed in detail. The production process and the characteristics of BOPP-foil was explained in depth. – *L. Jacob* (ExxonMobil Chemical Europe, Brussels) went into great detail on the chemistry and the resulting properties of the raw materials in the formulation of hot melt adhesives: "Raw Materials for Hot Melt Pressure Sensitive Adhesives and their Application". In this context the speaker presented a comprehensive view on the different classes of hydrocarbon resins (oil and bituminous-coal tar-based and those of natural origin) and the block copolymers which form the backbone. After a digression on their interaction, which is a determining factor for the strength of the PSA, the typical HMPSA-formulations were shown and a general evaluation was attempted in comparison to water-based alternatives. – The development and reproducible application of realistic testing methods is essential for the development of products, qualification of raw materials and quality assurance. The lecture by *S. Prestidge* (Adhesive Technical Services Ltd. / Chemsultants International, U.K.) "Physical Testing of Self Adhesive Tapes" was devoted to this topic. Standard tests in regard to peel resistance, adhesive strength, shear force and rolling resistance. The international harmonisation in the framework of such standards such as Afera, ISO / ASTM and FINAT are of particular interest. The sample preparation and details on execution in regard to the testing methods were discussed in detail. – *B. Lüthmann* (tesa AG, D) presented a look into the wide and fascinating field of the possibilities which irradiation hardening offers the formulator of adhesives: "Use of EB- and UV-irradiation for controlling PSA-tape properties". As everybody knows, two fundamentally different methods of irradiation are used: Electron beams (EB) and electromagnetic radiation in the suitable frequency range (UV). Generation, characteristics, (photo) chemicals and special formulation requirements (such as the utilisation of photo initiators in the case of UV irradiation) were presented in detail and the advantages and disadvantages of both technologies were discussed. Two case studies and a comprehensive overview on relevant specialised literature rounded off the presentation.

A. Thyssen (3M Deutschland GmbH, D) moderated the third conference part and introduced S. Keup (Degussa Goldschmidt AG, D) with „Selection of the Right Release Liner“. After a market overview (25 billion m² release liner area worldwide, the largest market share being North America with 43%, followed by Europe with 30%, then Asia with 23%; amount of labels 62%, adhesive tape 12%) the author dealt with the criteria for selection and the division according to release forces. The historic development of the silicone-based materials in the last fifty years was depicted and the systems for irradiation hardening (acrylic and epoxy compounds) were discussed in detail. Concluding with a view on possible future development of radicalic hardening UV silicones and insights into important testing methods. – A. Gross (Fraunhofer IFAM, D) presented “Modern Surface Treatment Methods”. The overview contained all common methods starting with the “simple” surface treatment by means of cleaning, degreasing and passivating, then turned to the various methods of chemical and physical pre-treatment

rounding off with after-treatment with primers, activators and adhesion promoters. Particular attention was placed on the fluorination of the various plasma treatment methods under atmospheric and reduced pressure. The latter were subsequently weighed off against each other and rated according to their industrial application possibilities. – In F. Schaefers (Max Kroenert, D) lecture “State of the Art Coating and Process Technologies for the Production of Release Liners and Tapes” systems engineering was brought to the centre of attention. Complete machines and details on these for solvent and water-based coating with a particular focus on the drying units were presented and discussed. General challenges for the future lie in the increasing pressure of cost for the operator of the machine as well as the increasing scope of work and the speed of assignments. – Hardly any topic in the entire chemical industry and therefore also the operator and formulator of chemicals for adhesives is on everyone’s mind and raises tempers to such a degree as “Reach – Registration, Evaluation and Authorization of Chemicals”. A topic

with a scope which cannot be underestimated with which the organiser ended the conference in a successful manner, competently moderated by A. Hessland (FEICA / IVK, D). A historic overview shows REACH as the (preliminary) pinnacle in a series of bodies of law for the assessment and classification of “hazardous substances” which goes back to the sixties. Details which are most problematic are in particular extremely high registration costs (up to 500,000 per substance!) and a generally unacceptable bureaucratic effort; both factors which are just difficult for some and even impossible for others to manage for many small and medium-sized companies. At the end of the presentations there were many unanswered questions and the desire for improvement of the current situation in regard to simplification and practicability. COATINGS Summing up an exceptionally successful “seminar” event: Keep it up, concept and realisation are excellent! Good bye and see you, now in a bi-annual rhythm, in 2007!

Dr. Michael R. C. Gerstenberger

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