ARCHCELL®泡沫的粘接

由于胶粘剂种类繁多，而且和 ARCHCELL®胶接的材料很多，我们很难向客户提供所有胶粘剂的数量、粘结方法、以及干燥和固化时间的所有资料信息。然而，我们非常乐意与最终用户和胶粘剂制造商商一起寻找实际的解决方案，对每个具体的产品和部件进行定制化的胶结工艺方案。对于大多数胶接问题，ARCHCELL®具有耐溶剂性，并且在高达 180℃的热固化温度时，仍然具有优异的热稳定性。因此可以几乎适用于所有商业胶粘剂。

在胶接之前，吸掉或用无油压缩空气吹掉 ARCHCELL®表面的灰尘，这是个必不可少的工序。

通常情况下，胶粘剂有以下三类：

1. 溶剂型胶粘剂；
2. 乳液胶粘剂；
3. 非溶剂型胶接体系

由于 ARCHCELL®表面溶剂挥发很难透过，因此必须注意，当使用溶剂型胶粘剂和乳液型胶粘剂大面积胶接 ARCHCELL®，或 ARCHCELL®与其他材料时，一定要在加压之前，将胶结面上胶粘剂中的溶剂充分挥发掉。用这些胶粘剂体系（通常为橡胶类）胶接的接头通常保持一定程度的弹性，因此具有很高的剥离强度。如果可能的话，对接头进行热固化，胶接质量将大大提高。

在胶粘剂涂敷到两面，并将交接面上胶粘剂中的溶剂充分挥发掉之后，于 80-120℃的温度下将其加压胶接在一起。压力需控制在其最高抗压强度的 40%，并于 20℃的情况下保持 1-5 分钟。当温度低于 80℃时，需移除胶接材料。

在特定情况下是可以仅将胶接剂应用在一面，但表面材料会在一定程度上变厚。干燥后，在清除空隙的情况下，将其热熔接至泡沫中。如果没有条件进行热压，表面材料还可通过预热垫片中较厚的金属板或纤维板来进行足够的加热工艺。

非溶剂型胶接体系包括热熔胶、双组份胶黏剂如环氧树脂、聚酯、甲基丙酸烯树脂。它们在充足的压力（0.05-0.3N/mm^2）下固化或在使用中具有很好的流动性。因此，可以很好的填充表面泡沫开孔。固化可以通过加热（最高 160℃）加速完成。胶结位置的硬度和刚性会得到极大的增加。

在使用胶膜和热熔胶进行胶接时，通常需要通过加热固化。为了将它们牢牢地粘接在被切开的 ARCHCELL®泡孔中，胶膜必须有足够的厚度（100-200g/㎡）。 有些双组份胶粘膜如酚醛胶膜在固化是会释放出挥发性物质。因此，应当在加热时轻轻施压。在胶接之前，压力机应短暂地打开让挥发物质跑掉。

当使用热熔胶时，为了避免气泡，在胶接之前常常可以通过打孔来进行排气。 在某些困难的情况下，为了更好的排气，可以在 ARCHCELL®板表面事先开槽，约 1-1.5mm 深，2mm 宽。

当 ARCHCELL®与其他材料胶接时，胶接剂通常按照与这些材料的相容性进行 选择。例如金属和层压塑料与环氧树脂，橡胶或聚氨酯胶粘剂，如丙烯酸玻璃或甲基丙烯酸树脂，如木头，纸材或玻璃纤维补强聚酯板，聚胺树脂，环氧树脂和聚氨酯胶粘体系。

为了获得非常平直的夹心结构，必须同时将 ARCHCELL®板的两面与蒙皮胶接。两蒙皮必须是相同材料且相同厚度。两面均匀加热和冷却，这些在夹心部件制造工艺中都是非常关键的环节。

如果 ARCHCELL®在胶接之前表面经过滚针处理，其得到的胶接强度将可以满足很高的要求。

因其有一定的热蠕变性，为了防止在加热加压过程中芯材压缩或超出规定范围的公差，我们建议在加压之前，将 ARCHCELL®芯材厚度在原尺寸范围上加 0.5-1mm 之后再将其合模，并通过厚度垫块压至最终尺寸。

Bonding of ARCHCELL®

Owing to the large number of available adhesives and the multitude of substances which may be bonded to ARCHCELL®, it is difficult to provide complete information on the methods and amounts, and application of adhesives, as well as the drying and curing times. However, in case of special problems, we, together with adhesives manufacturers, shall be glad to look for a practical solution. Still, for most bonding problems, ARCHCELL® offers the advantages of solvent resistance and heat distortion resistance for hot curing (epoxy resins up to 180 ℃) advantages which should not be underestimated. Practically all commercial adhesives can therefore be used.

It is indispensable that before bonding, the ARCHCELL® surfaces shall be freed from dust by suction or by blowing the dust off with oil-free compressed air.

The adhesives are usually classified in three groups:

1. Solvent-based adhesives
2. Emulsion adhesives
3. Solvent less adhesive systems

Since ARCHCELL® is very impervious to solvent diffusion, and great care must be taken when large areas of ARCHCELL® are to be bonded to ARCHCELL® or other diffusion-impervious materials by adhesives of groups 1 and 2, that the adherents dry off well after the adhesive has been applied to both sides before they are joined together under pressure. Joints made with these adhesive systems (generally rubber based) normally remain a little elastic and have good peel-off strength. If it is possible to heat-seal the joint, the quality of the bond can be greatly improved.

After applying the adhesive to both sides, the adhesive are dried off, then placed on top of each other and bonded under pressure at a temperature of 80-120 ℃. The pressure may be up to 40% of the maximum compression strength at 20℃ of the particular foam plastic and it should be maintained for 1-5 minutes. The bonded materials should be removed at a temperature below 80℃.

The solvent less system includes hot-melt adhesives, two-component adhesives like epoxy, polyester or methacrylic resins should be allowed to cure under sufficient pressure (0.05-0.3N/mm^2) or be very fluid during the application so that the cells of the foam are well filled. The cure can be accelerated by heat (up to 160℃). The joints become very hard and rigid.

Adhesive films and hot-melt adhesives need heat for bonding and can therefore normally be applied by heat-sealing. Adhesive films must be sufficiently thick (100 -200 g/m²) in order to anchor them firmly in the cut ARCHCELL® cells. Two-component adhesive films which give off volatile constituents like solvents or, in the case of phenolic resin films, water during the cure, should be warmed-through with gentle pressure. Before bonding, the press should be briefly bumped to allow the volatile constituents to escape.

When hot-melt films are used, it has frequently proved useful to perforate them before bonding in order to avoid air bubbles. For the purpose of better deaeration in difficult cases, prior grooving of the ARCHCELL® sheet surfaces will help. Grooves about 1 - 1.5 mm deep and 2 mm wide have proved useful.

When ARCHCELL® is to be bonded to other materials the adhesive may generally be selected according to its suitability for these materials. For instance, for metals and laminated plastics, epoxy resins, rubber or PU adhesives, for acrylic glass/methacrylic resins, for wood and paper or for glass fiber reinforced polyester sheets, polyester resins, epoxy resins and PU adhesives systems.

To obtain perfectly straight sandwich sheets, it is important for both sides of the ARCHCELL® sheet to be simultaneously bonded to the skin. Both skins must be of the same material and have the same thickness. Uniform heating and cooling on both sides are other basic conditions for the manufacture of flat sandwich sheets.

If the ARCHCELL® surface is treated with a needle roller before the application of the adhesive, the obtainable bond strength will meet very high requirements.

We recommend, in all cases, the use of oversize ARCHCELL® sheets (0.5–1 mm) for bonding skins, and to run the press to firm stop, lest the ARCHCELL® sheet be overstressed by the molding pressure at the high curing temperatures, or the dimensions be below the required tolerance through thermo elastics creep.