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Glass Safety Awareness: Proper Personal Protective Equipment (PPE) must be worn when processing or handling glass. A risk assessment should be conducted to determine the appropriate PPE for each step in the insulating glass manufacturing process.

1.0 GLASS (primarily coated glass)

1.1 Does glass used have a shelf life?

1.2 If glass is being stored, does it need to be stored in a controlled environment?

1.3 Do plant personnel have the appropriate safety equipment for handling glass?

1.4 Do plant personnel have the safety gloves for coated glass as recommended by the glass supplier?

1.5 Are the glass supplier instructions for the correct handling of glass and coated glass available to plant personnel and have they been trained to handle the glass correctly?

1.6 Are there any special cutting techniques in the glass involved?

1.7 Are the curing shell lubricants compatible with the glass (i.e.: coating)?

1.8 Do the edges need to be deleted?

1.9 Does the wash water need to be:

1.9.1 Checked for pH?

1.9.2 Contain detergent and if so, what kind?

1.9.3 Deionized?

1.9.4 A certain temperature range?

1.10 Is there a particular brush type needed in washing?

1.11 Does the glass require a pre-wash?

1.12 Is glass being handled to minimize damage?

1.13 Is surface orientation of coated glass being controlled during manufacturing and final application?

1.14 Are you recycling or meeting waste disposal regulations?

2.0 DESICCANT/DESICCATED MATRIX

2.1 Desiccant
2.1.1 Is the desiccant compatible with:
   2.1.1.1 Sealant type?
   2.1.1.2 Method of manufacture?
   2.1.1.3 Medium (air or inert gas fill/blend)?

2.1.2 Is the desiccant being stored and handled properly?

2.1.3 Has the desiccant supplier provided the proper test kit and procedure.

2.1.4 Do you have an In-plant Quality Control program? Is it known and understood by plant personnel?

2.1.5 Do plant personnel know how to test the desiccant adsorption capacity and how often to do this?

2.1.6 Is the correct quantity of desiccant being loaded into the spacer frame?

2.2 Desiccated Matrix
   2.2.1 Is the desiccated matrix selected compatible with the sealant?
   2.2.2 Is the packaging checked for damage and if it has been damaged or the vapor seal is questionable, is the package rejected?
   2.2.3 Do plant personnel know how to check the desiccated matrix for activity?
   2.2.4 Is there a quality control process in place? Is it known and understood by plant personnel?

2.3 Are you recycling or meeting waste disposal regulations?

3.0 FRAMEWORK
   3.1 Is spacer type (steel, aluminum, self-contained, fiber, etc.), finish (anodized, mill, etc.), and integrated spacer systems being stored according to manufacturers’ recommendations?
   3.2 Is profile type (rectangular, low profile, T-spacer, etc.) compatible with manufacturing method?
   3.3 Has a cutback been established in accordance with recommendations by your sealant supplier that meets the minimum sealant depth? (Refer to IGMA TB-1201-89 (05), Sealant Manufacturers’ Minimum Sealant Dimensions and Placement Survey)
   3.4 Is a cutting lubricant (for cutting the spacer) used, and if so, is it compatible with coatings on glass and sealant?
3.5 Has the cutting lubricant been thoroughly removed? Is the glass clean?

3.6 Has cut spacer been cleaned of rough edges or fillings?

3.7 Is corner construction (nylon, zinc, bent, welded) compatible with manufacturing process and stored properly by type?

3.8 Are corner connectors and inline connectors sealed adequately?

3.9 Is the finished frame stored properly and assembled into the IG unit within a maximum “in process” time prior to sealing time established in conjunction with your desiccant / desiccated matrix supplier?

3.10 Are you recycling or meeting waste disposal regulations?

4.0 SEALANT

4.1 Are all IG" sealants compatible with:

4.1.1 Desiccant?

4.1.2 Spacer assembly?

4.1.3 Glass coating?

4.1 Are sealant types (one part, two part, thermoplastic, thermosetting) suitable for manufacturing method?

4.2 Are sealant types:

4.2.1 Mixed?

4.2.1.1 If so, is ratio and mixture checked?

4.2.2 Heat applied?

4.2.2.1 If so, is temperature checked?

4.3 Are in-house Quality Control procedures being followed?

4.4 Has quantity of sealants and sealant placement been defined and recommended by sealant supplier and manufacturing method? (Refer to IGMA TB-1201-89(05), Sealant Manufacturers’ Minimum Sealant Dimensions and Placement Survey)

4.5 Have you verified that the sealant is compatible with any glazing sealants that will be used in the final product?

4.6 Are you recycling or meeting waste disposal regulations?
5.0  GAS FILLING

5.1  Has percentage of gas content been established?

5.2  Has gas type been chosen?

5.3  Have shipping to elevation and temperature changes been accounted for?

5.4  Is gas filling method compatible with sealant system?

5.5  Do you have a regular schedule of maintenance for gas filling equipment?

5.6  Do you have a quality control process for gas filling? Is it known and understood by plant personnel?

5.7  Is there a verification method for post filling percentage content?

5.8  How often is production unit gas content verified?

5.9  Are records maintained for the appropriate time period?

6.0  QUALITY CONTROL (Refer to TM-4000-02(07), IG Manufacturing Quality Procedures)

6.1  Do you have a quality control procedures manual?

6.2  Are plant personnel trained on equipment and processes applicable for their area?

6.3  Are you evaluating workmanship?

6.4  Are you logging incoming raw materials?

6.5  Are you labeling for component trace ability?

6.6  Are you testing to industry standards?

7.0  PACKAGING AND SHIPPING OF FINISHED PRODUCTS

7.1  If crated, is glass blocked properly?

7.2  Has exposure to elements – particularly moisture – been eliminated?

7.3  Are there any special shipping requirements (labeling, altitude, etc.)?
8.0 CAPILLARY TUBES (Refer to TB-1601-95(07), Guidelines for use of Capillary Tubes)

8.1 If capillary tubes are used, have proper techniques been followed?

8.2 Are tubes consistent with unit design?

8.3 Are tubes to be left open or closed?

8.4 Have you given proper instruction to shippers and installers regarding tube orientation, glazing design and closing technique?

9.0 OTHER

9.1 Is unit being glazed according to standard glazing recommendations (Refer to TM-3000-90 (04), North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use.)?

9.2 Is glazing material checked for compatibility with IG edge sealant?

9.3 Are insulating glass units given a final inspection prior to packing and shipping?

10.0 REFERENCES

10.1 TM-3100-03, Preventing IG Failures
10.2 TM-4000-02 (07), IG Manufacturing Quality Procedures
10.3 TB-1601-95 (07), Guidelines for Capillary Tubes
10.4 TB-1201-89 (05), Sealant Manufacturers Minimum Sealant Dimensions and Placement Survey
10.5 TM-3000-90 (04), North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use
10.6 TB-2403-91, Guidelines for IG Manufacturers’ Studies of Sealant Compatibility
10.7 TM-3100-09, Voluntary Guidelines for the Identification of Visual Obstructions in the Airspace of Insulating Glass Units