



Lesson Plans

Lesson Plan:

Sector: aeronautics

Occupation: Aircraft assembler

(NOC 8481)

Theme: Aircraft part assembly

Occupational Task: Read and follow directions on using a sealant

Describe Essential Skills (ES) developed during the learning activities:

Reading Text

- Read labels for instructions and precautions. (ES 1)
- Read more complex texts to locate a single piece of information or read simpler texts to locate multiple pieces of information. (ES 2)
- Make low-level inferences. (ES 2)
- Read pamphlets about chemicals to determine if they are suitable for their operation. (ES 2)
- Read specifications for the use of sealants. (ES 2)

Document Use

- Read application charts when using a new product. (ES 1)
- Limited search using key words to locate information. (ES 1)
- A low-level of inference is orrequired. Information found in the document is a synonymous match to the infation required. (ES 2)
- Get information from graphs. (ES 3)

Oral Communication

- Interact with co-workers when discussing procedures and activities. Inform co-workers of progress or unexpected conditions. (ES 2)
- Clarify requirements with co workers. (ES 2)

Numeracy

- Compare times. (ES 3)
 - Develop an equation to show relationship of temperature and time. (ES 3)
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Indicate the Canadian Language Benchmarks (CLB) competencies developed during the learning activities:

Speaking

- Interact with others to exchange information on products. (CLB 5)
- Explain instructions for use of industrial chemical products. (CLB 5/6)
- Give clear instructions in a workplace situation related to moderately complex technical tasks. (CLB 7)
- Make a suggestion on how to solve a problem or make an improvement. (CLB 7)

Reading

- Find specific detailed information in charts. (CLB 5)
- Follow main ideas, key words and important details in a one-page formatted text. (CLB 6)
- Texts are varied and may be of a specialized or technical nature. (CLB 5/6)
- Locate 3-5 pieces of specific, detailed information in charts for comparison and contrast. (CLB 6)
- Locate and integrate, or compare/contrast 2-3 specific pieces of information across sections of text. (CLB 7/8)
- Convey information from a graph or chart. (CLB 5/6)

Writing

- Tasks are in standard format; completes a chart (CLB 5)

Language and culture focus for the learning activities:

- polite interrupters, requests for clarification, sequential markers, giving explanations

Grammar

- Clarification questions (*Could you explain this to me? Excuse me, would you mind telling me what this means?*)
- Adjectives: equatives/comparatives/superlatives (*the same as, longest time etc.*)
- Prepositional phrases (*after application, after completion, of assembly, of the structure*)

Vocabulary

- cure time, cure rate, contaminants, applied sealants, primer
- polite clarification phrases (would you mind, could you explain...)

Culture

- Noise in the workplace may make it difficult to hear instructions.
 - Print of specifications may be smaller and more difficult to read.
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- It is acceptable to ask clarification questions. Politeness is important.
 - It is expected that you know where process specification sheets are stored. Return the sheets when you are finished so the next person can find them.
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Suggested teacher resources and classroom materials needed:

- www.towes.com
 - Measure Up
 - Choice of activities
 - Explore careers
 - Occupation name
 - Aircraft Assemblers & Aircraft Assembly Inspectors
 - Product Instruction sheets and question sheets for each learner
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Estimated time for the learning activities: **1 lesson/1 ½ hours**

Learner Profile:

- Learners will be assembly workers.
 - They will be familiar with specification sheets.
 - They will be educated workers and have developed learning skills (some will have Engineering degrees from their countries).
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Learning Objectives:

- Learners will be able to identify factors affecting application of a sealant.
 - The learner will be able to apply sealant correctly during the assembly process by following the sealing process specification.
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Learning activities:

Introductory activity (30 minutes)

- Brain storm factors for using a sealant correctly.
 - Put the following words on the board and ask the learners what they mean: cure time, cure rate, contaminants, applied sealants, primer, tack free.
 - Hand out a Sealing Process Specification Sheet to each learner.
 - Learners look at the different parts of the Sealing Process. What conditions do you have to watch for in the Sealant process? (temperature, avoid contaminants, drying times of sealant)
 - Discuss the different classes of sealants, their purpose and use.
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Reading and speaking activity 1 (30 minutes)

- Learners scan the sealing specification sheet for keywords and answer the following questions, written on the board. (*Ask learners what the keywords in the questions are and underline them.*)
 - What is the title for Figure 2?
 - What are four examples of factory contaminants?
 - Why are primers sprayed or brushed onto sealants?
 - Why do you not apply primer or enamel over silicone sealants?
 - What is the dry time for Sealant Classes B and D?

Reading activity 2 (20 minutes)

- Learners focus on the bottom part of the sheet where the sealant dry times are.
- In pairs, learners compare the sealant dry times for the different sealant classes. Remind learners to use contrastive vocabulary (the same as, the longest, longer etc.)
- Each pair completes a chart to show the comparison between dry times for the sealant classes.

	Sealant dry time	Quickest dry time	Longest dry time
Sealant class			

- Ask individual learners to compare the sealant drying times (*What classes of sealants have the same drying times? What class of sealant has the longest drying time? What are the drying times?*)
- Ask learners to identify any cautions they read related to dry times and use of primer.

Speaking activity for higher benchmark (CLB 7/8) learners

- Learners prepare a presentation about the graph to explain to other learners in a later class. They can explain the ratio between time and temperature and how to calculate new drying times. (*These learners can prepare their presentation while the rest of the learners are working on the reading activity 2.*)
- They can use information from www.towes.com
 - Measure Up
 - Choice of activities
 - Explore careers
 - Aircraft Assemblers & Aircraft Assembly Inspectors
 - Sealing Process (task 2)
- When they present, ask them to explain new vocabulary (function, ratio) to class.



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- They will use numeracy skills for this activity (interpretation of Figure 2)
 - Learners ask polite clarification questions (Remind learners to use: Would you mind explaining that again? Excuse me, what did you mean by...?)
 - Give Sealing Process Questions to learners to answer either in class or at home for next class.

Additional and/or extension learning activities:

Ask learners to talk about sealants used in their factory area. What class are these sealants and how do they know? Where are the specification sheets kept? What does this specification sheet tell us? If appropriate, have learners choose another spec sheet and explain it to the class the next day.

Evaluation:

Teacher evaluates the responses to the Sealing Process Questions.

Task Writer:

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NOC 9481 Aircraft Assemblers & Aircraft Assembly Inspectors

Sealing Process

Aircraft assemblers use sealants during the assembly process. Look at the excerpts from a General Sealing Process Specification.

Task 1 What does the information in Figure 2 show?
Document Use

Task 2 Look at Figure 2. As the temperature rises, what happens to the time?
Numeracy

Task 3 List 4 examples of factory contaminants.
Reading Text

Task 4 What might happen if primer is applied over a silicone sealant?
Reading Text

Task 5 The assembler finishes applying a class E sealant at 2:00 p.m. At what time will the surface be ready for the Protective Primer?
Numeracy



Sealing Process NOC 9481 Aircraft Assemblers & Aircraft Assembly Inspectors

General Sealing Process Specification

Curing times for ABC5-95

- (1) The times at 77 +/- 5 F to obtain handling strength are in Table IV.
- (2) Time to achieve handling strength will be cut approximately in half for each 20 F rise in temperature. Conversely, temperature below 75 F will greatly increase the required cure time. Cure time information for ABC5-95 Class B-2 at temperatures greater than 11F is given in Figure 2. There is no humidity requirement at temperatures greater than 110 F.

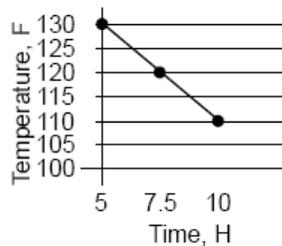


FIGURE 2 CURE RATE AS A FUNCTION OF TIME AND ELEVATED TEMPERATURE (For Reference Only)

PROTECTION OF APPLIED SEALANTS

- a. Keep applied sealants free of factory contaminants like grease, oil, dirt, metal chips, etc.
- b. Before or after inspection acceptance of sealant application, ABC10-11, Type I primer or Type II enamel, ABC10-20, Type II primer, or ABC10-103, Type I primer may be sprayed or brushed over the sealant in accordance with CBA5736, CBA5793 and CBA5325, respectively, at the following sealant conditions stated below as protection from the factory contaminants. Once the primer is dry or immediately after sealing, other work may be performed if care is taken to prevent sealant from being displaced, damaged, or contaminated.
- c. Do not apply primer or enamel (Section 8.4.8b.) over silicone sealants.

CAUTION Primer does not adhere to silicone sealants.

Sealant Class – Sealant Dry Time for Application of Protective Primers

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|---------------|-------------------------------------------------------------|
| Class A | – When sealant is tack free |
| Class B and D | – Immediately after application |
| Class C | – Immediately after completion of assembly of the structure |
| Class E | – One hour minimum after application |
| Class G | – Immediately after completion of assembly of the structure |

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How Do Your Skills Measure Up?