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# LIMS 1.01

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## Outline

LIMS 1.01 is the 1st version of a free software aimed at making Quality Control more efficient. LIMS 1.01 is a cloud application. It is accessible 24/7 with no interruption.

Typical businesses where LIMS 1.01 is valuable are all the industries where raw materials are transformed into finished products (Chemicals, Plastics, Paints, Inks, Food and beverage...)

Typical cases where it is useful is when the Quality Control is done either on workbooks or on Excel spreadsheets.

Other modules will be available soon:

- Scheduling
- Manufacturing
- Procurement
- Quality
- Manufacturing
- Warehousing
- Shipping.
- Sales

**Note:** Design of the screens, logos and other features are subject to change without notice.

**Note:** Fully customizable versions of this software are available. Contact our team:

[support@welims.com](mailto:support@welims.com)



## Definitions

**Items:** Families, Methods, Products and Raw Materials are items. Each series of items is accessible in the Administration Menu.

**Testable Items or Products:** Testable Items are Finished Products and Raw Materials, as those only have a specification. We often refer to testable items as Products.

**Semi Products:** 3 different categories of Product (Testable Items) are possible in the default setting for LIMS1.01: Raw Materials, Semi Products and Finished Products. Semi Products are products manufactured as intermediaries for finished products. They usually are not made to be sold. Semi Products can be used in formulas just like raw materials.

**Specification:** Is the list of tests and their Min and Max for a given product. Raw Materials, Semi Products and Finished Products can have Specifications.

**Formula:** Is the list of raw materials and their percentage. Semi Products can also be part of the formula just like a raw material. Only Semi Products and Finished Products can have a Formula.

**Workflow:** A series of steps that makes sure that a specific process is respected. An item goes through each step of the workflow. For each step a Quality screen is accessible just by clicking on the link of the specific item. Informations have to be entered in the form to be able to move the item further down the workflow.

**Batch:** A quantity of a product that is received (Raw Material) or manufactured (Semi Product or Finished Product). A batch is tested according to appropriate methods found in the specification of the product. After testing the batch can be released if it passes all the tests.

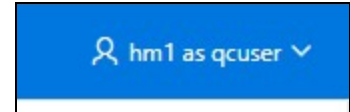
**Sample:** A sample is a small quantity of a product brought to be tested. The sample is supposed to be representative of the batch. Several samples can be taken for a given batch. These samples can be tested individually.

**CAR:** Corrective Action Request. When a sample or a batch is Out Of Specifications, the QCUSER has to put the batch on CAR. The CAR can be resolved only by the QCMANAGER: Either accepted (and the batch returns to the Testing Step) or Rejected (and the batch is no longer available for testing).

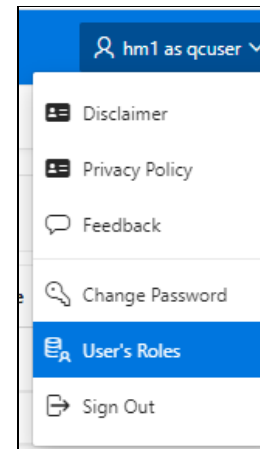
**Audit:** All activities are traced in the tables of the database. The creations, modifications, deletion, activation, deactivation etc... actions are recorded with the name of the user and the date it was performed. Udit tables are available with an ADMIN account.

## Roles

2 roles exist in the LIMS 1.01 system: QCUSER and QCMANAGER. Your user name and your role is displayed in the upper right corner of the screen (Nav Bar).







If you have several roles, you can switch roles clicking on the Nav Bar and click User's Roles.








On the Home Page, you can see the common tasks for each Roles.

- QCMANAGER has to validate New Families, New Methods, New Products and New Raw Materials. He/She also needs to take actions whenever a batch is on CAR (Corrective Action Request).
- QCUSER has authority to do all the rest: create the Families, Methods, Products, Raw Materials, Specifications and Recipes. QCUSER has also full control on the Quality Control Workflow (creating a batch, Testing it and releasing it).



**Admin Metrics**

0 Pending Requests 	2 Active Users 	3 Batches in the last 30 days 	28 New Items the last 30 days 
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**QC Manager tasks**

8 Pending Families 	0 Pending Methods 	0 Pending Products 	0 Pending Raw Materials 	0 Batches on CAR 
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**QC User tasks**

1 Batches Pending 	0 Batches Testing 
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**Useful Links**

10 YouTube 
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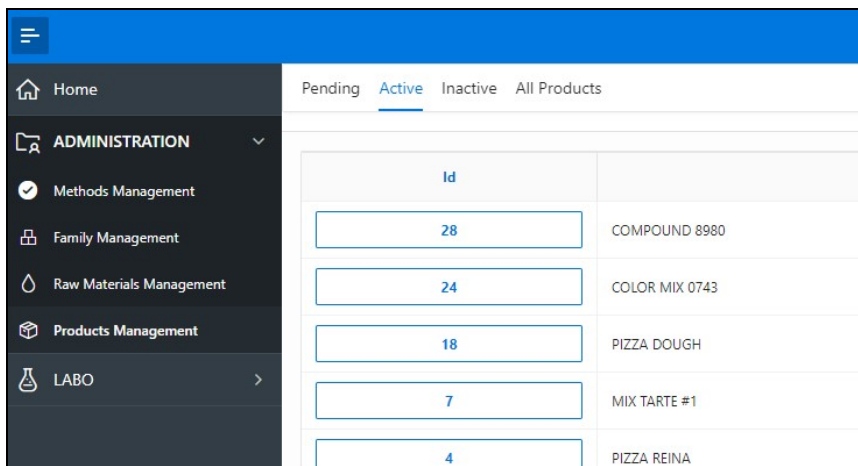
## Item Workflows

Management of Families, Methods, Products and Raw Materials works through workflows. QCMANAGER role can complete the full workflow from creation to finish. Or QCUSERS can create the items and prepare them for QCMANAGER to validate them in order for them to be Active.

## Administration Workflows

Those are the ones where you create the Families, Methods, Products and Raw Materials that your organization needs.

All the workflows are similar and contain **Pending, Active, Inactive** steps. The **All** step serves only to lookup an item and localize it through the workflow.



Pending Active Inactive All Products	
Id	
28	COMPOUND 8980
24	COLOR MIX 0743
18	PIZZA DOUGH
7	MIX TARTE #1
4	PIZZA REINA

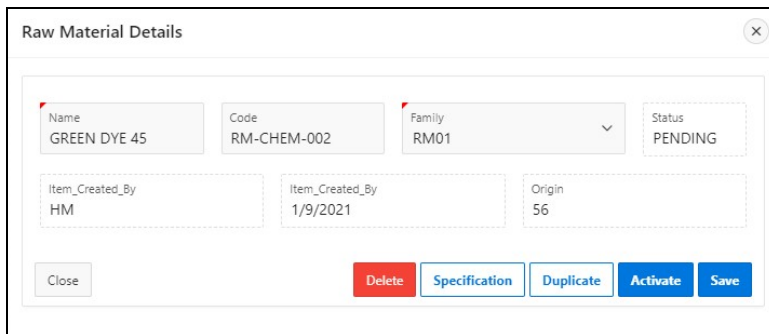
## Create

The Pending Page is where your items are created and configured.

QCUSER role can create a new Item either by clicking on New button on the Pending screen Or simply by opening an existing item and duplicating it. This item can be in any step of the workflow. The item freshly copied will always be placed on the **Pending** step.

## Activate

In order for an item to become active, the role QCMANAGER has to Activate it. This can be done opening the item on the Pending Page and clicking Activate.



Raw Material Details

Name GREEN DYE 45	Code RM-CHEM-002	Family RM01	Status PENDING
Item_Created_By HM	Item_Created_By 1/9/2021	Origin 56	

Buttons: Close, Delete, Specification, Duplicate, Activate, Save

As long as an item is not activated (either Pending or Deactivated), it won't be usable for production. For example, you won't be able to use a given raw material in a recipe if it is not activated. You won't be able to use a Method in a specification if it is Deactivated. You won't be able to test a Product if the product itself is not activated etc...

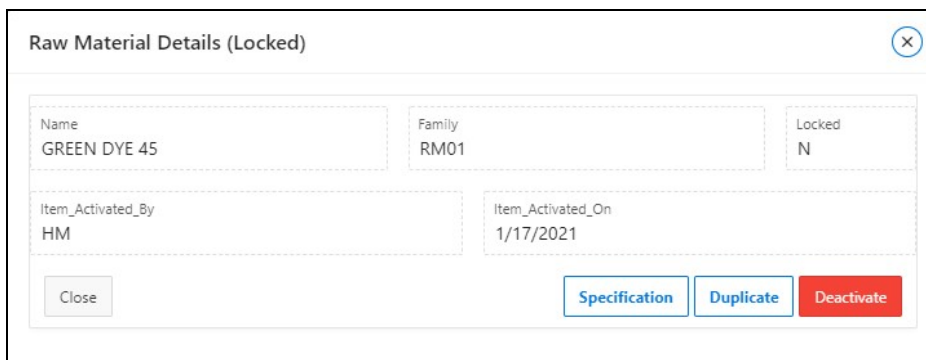
## Deactivate

If for some reason an item needs to be removed from production, it can be deactivated. QCMANAGER has the authority to Deactivate an Item.

Deactivated Items will no longer be usable in production but recipes containing deactivated raw materials and Specifications using deactivated Methods still can be used.

Deactivated Items will be visible in the **Inactive** step of the workflow. If needed, a Deactivated Item can still be duplicated.

**Note:** Locked Items are those that come with the database as an example of how it works. Locked Items cannot be deactivated.



Raw Material Details (Locked)

Name GREEN DYE 45	Family RM01	Locked N
Item_Activated_By HM	Item_Activated_On 1/17/2021	

Buttons: Close, Specification, Duplicate, Deactivate

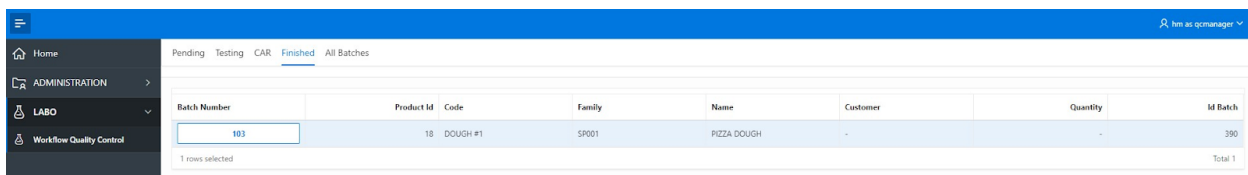
## QC Workflow

QC workflow is where the testing of Raw Materials and Finished products happen. Once your Methods, Raw Materials and Finished products are activated you can start testing them and print Bill Of Materials and Certificates Of Analysis.

All the tasks in this workflow can be carried out by the QCUSER.

If the batch needs to be put on CAR then the QCMANAGER needs to take action.

The QC workflow contains the following steps: **Pending, Testing, CAR and Finished.** All is a list of batches with their locations in the workflow.

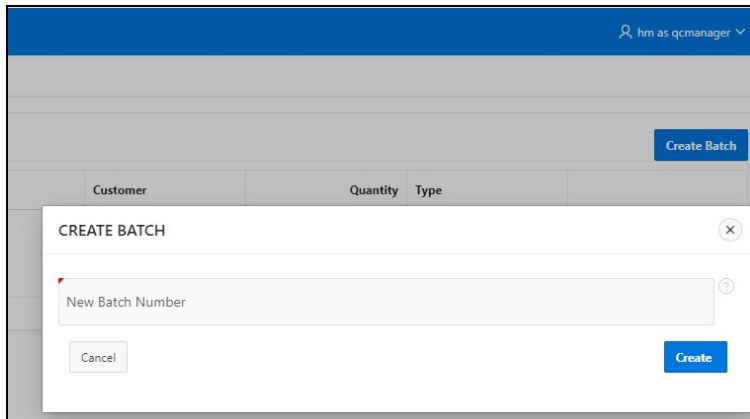


Batch Number	Product Id	Code	Family	Name	Customer	Quantity	Id Batch
103	18	DOUGH #1	SP001	PIZZA DOUGH	-	-	390

1 rows selected Total 1

## Batch Creation

**Pending** is the step where batches can be created. Just click Create Batch and give it a Batch Number. Then click the Create button on the form.



CREATE BATCH

New Batch Number

Cancel Create

**Note:** The same number cannot be given to 2 different batches. If you try to create a batch and give it a number that already exists, the system will throw an error and won't create the batch.

**Note:** Any combination of characters and number is valid for a batch number. The maximum length for the batch number is 20.

The batch is created and will appear on the Pending List, the 1st step of the QC Workflow.





Batch Number	Mvt Date	Product Id	Code	Family
100	1/17/2021	1	DEF	FP01

When a batch is created it is configured automatically to be a DEFAULT PRODUCT. Just click on the button on the Batch Number Column and the Detail screen will appear where you will be able to change the Product that this batch represents. Select the type and then select the product.

EDIT BATCH

Batch Number  
100

Type  
Semi Products

Product Id  
MIX TARTE #1

EDIT BATCH

Batch Number  
100

Type  
Finished Products

Product Id  
DEFAULT PRODUCT

Close Batch Info

**Note:** Batches that are in Pending are reported on the Home Screen under the QCUSER tasks.  
**Note:** The Batch Info Button opens a screen where you can put information regarding the batch: Namely the quantity being produced and the customer if any. You can also print a Bill Of Material for the batch containing the batch details and the formula with the quantities of each raw material.

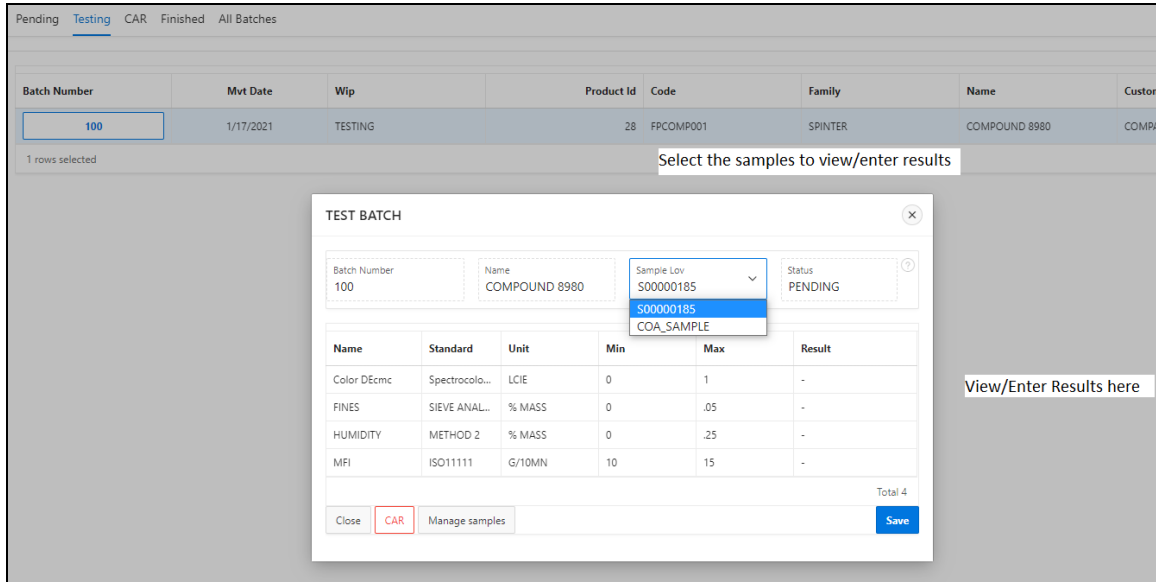
When the batch is ready, click Move To Testing and the batch will leave the Pending Page and be available in the Testing Page.

## Testing

**Testing** is the step where the batch is being tested according to its specifications. Upon creation of a batch, 2 samples are created. 1 for testing and another one called COA\_SAMPLE. When you click open the Detail screen, you can access both of them with the drop down list.

COA\_SAMPLE is the set of values that will be printed on the COA. They can be entered manually or they can be generated automatically by clicking on the COA Data button that

appears when the COA\_DATA gets edited. In this case, values are entered automatically as the average value of all Approved samples of this batch.



TEST BATCH

Batch Number: 100, Name: COMPOUND 8980, Sample Lvl: S00000185, Status: PENDING

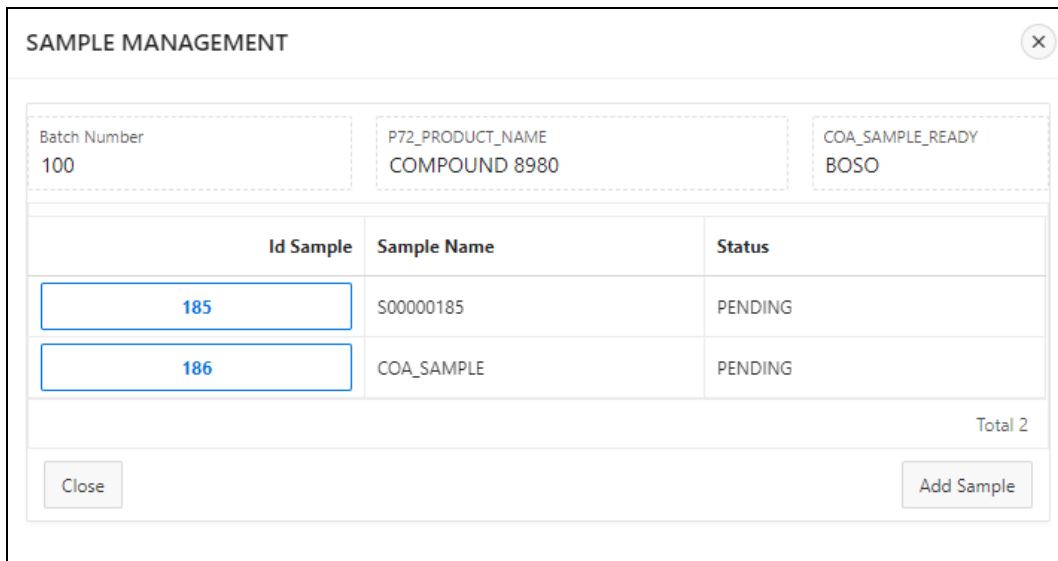
Name	Standard	Unit	Min	Max	Result
Color D&Ecmc	Spectrocolo...	LCIE	0	1	-
FINES	SIEVE ANAL...	% MASS	0	.05	-
HUMIDITY	METHOD 2	% MASS	0	.25	-
MFI	ISO11111	G/10MN	10	15	-

Total 4

Buttons: Close, CAR, Manage samples, Save

You can switch from 1 sample to another and view/enter results for a given sample.

Click on Manage Samples to open the Sample Management dialog box.



SAMPLE MANAGEMENT

Batch Number: 100, P72\_PRODUCT\_NAME: COMPOUND 8980, COA\_SAMPLE\_READY: BOSO

Id Sample	Sample Name	Status
185	S00000185	PENDING
186	COA_SAMPLE	PENDING

Total 2

Buttons: Close, Add Sample

This screen shows you an overview of the samples for the current batch.

You can add a sample if needed, just click the Add Sample button and it will be added to the list. Samples are given default names and can be edited for clarity. Just click on the Sample button to open the Edit Sample screen.

**EDIT SAMPLE** ✕

---

Id Sample  
185

Sample Name  
S00000185

Tests  
4

Testsok  
0

Testfail  
0

Testpending  
4

Acceptable  
false

Status  
PENDING ?

Note

Close

Save

On this screen you can Edit the sample name and add a note to the current sample. You also see the results for the tests of this sample.

**Rule:** In order to pass a sample and set its status to Accepted, TestOK needs to be equal to Tests. If TestFail or TestPending is not zero, the status can only be Pending or Rejected. The calculation of the number of OK tests and fail tests is done automatically. If a result is entered into the Test Batch screen that is within the tolerance of the test, then it is an OK result. If it is outside it is a Fail test. If no entry is made then it is a Pending Test.

In my example, I added another sample. SO now I have 2 real samples and the COA\_SAMPLE. The real samples have been renamed BOX1 and BOX2.

I filled the results for the samples Box1 and Box2 as follows:

**TEST BATCH** ✕

---

Batch Number  
100

Name  
COMPOUND 8980

Sample Lov  
BOX1 v

Status  
PENDING ?

Name	Standard	Unit	Min	Max	Result
Color DEcmc	Spectrocolo...	LCIE	0	1	.5
FINES	SIEVE ANAL...	% MASS	0	.05	.02
HUMIDITY	METHOD 2	% MASS	0	.25	.001
MFI	ISO11111	G/10MN	10	15	12
Total 4					

Close

CAR

Manage samples

Save

**TEST BATCH** ✕

---

Batch Number  
100

Name  
COMPOUND 8980

Sample Lov  
BOX2 v

Status  
PENDING ?

Name	Standard	Unit	Min	Max	Result
Color DEcmc	Spectrocolo...	LCIE	0	1	.65
FINES	SIEVE ANAL...	% MASS	0	.05	.001
HUMIDITY	METHOD 2	% MASS	0	.25	.002
MFI	ISO11111	G/10MN	10	15	12.5
Total 4					

Close

CAR

Manage samples

Save

Both these samples have been tested fully and they are 100% inspec.

**Rule:** In order to approve a batch, all its real samples need to be Accepted (i.e they need to be fully tested and their results need to be 100% within tolerances). The COA\_SAMPLE also needs to be generated (either manually or automatically) and its status needs to be set to Accepted.

**SAMPLE MANAGEMENT** [X]

Batch Number: 100      P72\_PRODUCT\_NAME: COMPOUND 8980      COA\_SAMPLE\_READY: BOCC

Id Sample	Sample Name	Status
185	BOX1	ACCEPTED
187	BOX2	ACCEPTED
186	COA_SAMPLE	ACCEPTED

Total 3

Close

Once the sample status for each of the samples to Accepted return to the TEST BATCH screen and select the COA\_SAMPLE. A green Approve button will be displayed on the bottom right.

**TEST BATCH** [X]

Batch Number: 100      Name: COMPOUND 8980      Sample Lov: COA\_SAMPLE      Status: ACCEPTED

Name	Standard	Unit	Min	Max	Result
Color DEcmc	Spectrocolo...	LCIE	0	1	.575
FINES	SIEVE ANAL...	% MASS	0	.05	.0105
HUMIDITY	METHOD 2	% MASS	0	.25	.0015
MFI	ISO11111	G/10MN	10	15	12.25

Total 4

Close    **CAR**    Manage samples    Approve

APPROVE\_BATCH ✕

Batch Number  
100

Product Name  
COMPOUND 8980

Alert  
**By clicking Approve, I confirm this Batch was tested according to approved procedures and conforms its specifications. The COA will be generated based on the ACCEPTED COA\_SAMPLE.**

Once Approved, the batch will leave the Testing Page and be available in the Finished Page.

## Finished

**Finished** is the page where all the batches that have been Approved are available. If you click a batch you will be prompted with a form where you can print a COA (Certificate Of Analysis) or a Full Report. The COA contains the data regarding the batch including the customer and the quantity and the results saved earlier under COA\_DATA.

The full report contains the data that the COA contains but also the Audit table of this batch (transactions with dates and user ad CAR data).

## CAR

**CAR** is the page where all the batches that have been stopped appear. CAR means Corrective Action Request. They can be initiated from the Testing page. Click on the batch to open the TEST BATCH screen. This batch has no specification, we're going to put it in CAR for that reason. Just click on the CAR Button and fill out the CAR BATCH screen. Then save.

Once the batch is in CAR it no longer appears on the Testing Page. You can view it on the CAR page.

Open the RESOLVE CAR screen by clicking on the batch number on the CAR page. Then select how to resolve this CAR. You can also enter remarks on the dialog box.



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**Note:** CAR history with comments on the CAR and its resolution appear on the Full report of the batch.

**Note:** Only QCMANAGER can resolve a CAR.

**Note:** 2 possibilities to resolve a CAR: Either Cancel CAR (and the batch will return to Testing) or Dispose (and the batch will be deleted).




# Addendum

## Examples of print Outputs

**Note:** Outputs are generated as pdf files.

### Bill Of Material (BOM)



Made with  with APEXOfficePrint  
(Dev Cred)

## Bill of Material

<b>Batch Number</b>	100
<b>Code, Name, Family,</b>	FPCOMP001 COMPOUND 8980 SPINTER
<b>Formula</b>	14
<b>Customer</b>	COMPANY
<b>Quantity</b>	20000
<b>Instruction</b>	See process instructions


Family	Code	Name	%	Mass
RM01	RM-PLASTICS	POLYCARB 001	95	1900000
SPINTER	SPCOLO001	COLOR MIX 0743	5	100000





## COA (Certificate Of Analysis)



Made with  with APEXOfficePrint  
(Dev Cred)

# Certificate of Analysis

<b>Batch Number</b>	100
<b>Code, Name, Family,</b>	FPCOMP001 COMPOUND 8980 SPINTER

Method	Standard	Unit	Min	Max	Result
Color DEcmc	Spectrocolorimeter	LCIE	0	1	0.575
FINES	SIEVE ANALYSIS	% MASS	0	0.05	0.0105
HUMIDITY	METHOD 2	% MASS	0	0.25	0.0015
MFI	ISO11111	G/10MN	10	15	12.25

Last Updated by: HM on 1/17/2021

Status: APPROVED

Full report

## FULL REPORT

<b>Batch Number,</b>	100
<b>ID BATCH</b>	461
<b>PRODUCT_ID</b>	28
<b>CODE</b>	FPCOMP001
<b>NAME</b>	COMPOUND 8980
<b>FAMILY</b>	SPINTER
<b>SPEC_ID</b>	22
	14
<b>FORMULA_ID</b>	201
<b>ID_PLANNING</b>	
<b>STATUS</b>	APPROVED
<b>LAST_UPDATE_DATE</b>	1/17/2021
<b>UPDATED_BY_ID</b>	HM

### Test Results

Method	Standard	Unit	Min	Max	Result
Color DEcmc	Spectrocolori meter	LCIE	0	1	0.575
FINES	SIEVE ANALYSIS	% MASS	0	0.05	0.0105
HUMIDITY	METHOD 2	% MASS	0	0.25	0.0015
MFI	ISO11111	G/10MN	10	15	12.25

### Movements

MVT_ID	WIP	USER	DATE
806	PENDING	1/17/2021	HM
808	TESTING	1/17/2021	HM
809	FINISHED	1/17/2021	HM

**CAR**