Just to get through a quick caveat, working with results requires understanding exactly what has been stored.

For a particular result you should know:

Is the result a scaler, vector or tensor?

Is its location element or nodal: element centroidal, element nodal, element gauss point or nodal.

This is important as element nodal means that at a common node between two elements there are two result values, a nodal result is a single value.

What are the layer positions: Z1, Z2, non-layered etc.

Until you know these details don't proceed further

OK, now to try to answer the problem:

I will assume you are using Nastran results and its terminology.

You say you have created two results using the stress tensors. I assume that IF you were using shell(2D) elements that you selected both layer positions (Z1 and Z2) as well as all the relevant result cases when you were doing the Create->Results->max/min options.

I assume that the original tensor result was element nodal in its location. Doing a fringe plot of the result you made with the Plot options "Averaging Domain" set to none should confirm this by making a fringe like this



This is to understand exactly what the two results are that you created – i.e. tensor result and location is element nodal and the layer position is non-layered.

You want to create a new result that is one divided by the other, the standard results form cannot do this so you need to use the Utilities/Results/Results Toolbox...



The results Toolbox is exceeding versatile but because it packs so much functionality is confusing to start with.

A limitation I hit with it is it will only store nodal/element centroid results and not element nodal. Therefore if starting with element nodal results I need to load them into the toolbox as nodal, which means the nodal value is an average, as small limitation.

The toolbox loads results into a "register" of which there are 5, Res1...Res5.

It does calculations/PCL function evaluation using the register values to create a new register value. E.g res3=res2/res1

Then it can store a register value as a new result.

Start up the toolbox and load the maxprin result into res1.

As my result that was calculated with the envelope is a tensor and element nodal based , In the toolbox specify you want to get "Node" result and a "scalar" value for all the nodes ("Node 1:#") Load this into register res1. The result I am going to pick is the maxprin envelope tensor result so I want to derive the maximum princ stress (P1) from it.

Note in the picture below it is just the bits in red that you adjust, ensuring that you pick the correct result to load, OK should load the result.

Results Toolbox	Select Results
Result Entities © Scalar © Node © Scalar © Element © Vector © XYZ © Tensor	14 Loadcases 3-s2 4-s3 24 12-maxprin_frm_tensor_z1nz2 13-minprin_frm_tensor_z1nz2 E
Load Results into Register:	24
Coordinate Frame Derivation: P1 ▼ Location: As Is ▼	24 4-Subcase 1
Calculated Results into Register:	1 +
Register Assignment Method: Use Operators Register: Operator: Register:	1.1-Stress Tensor,
Res2)+ Layers
(func(\$1,\$2,\$3,\$4,\$5)) MAX(\$1,\$2)	
Calculate)+ _<
For Results in Register: Res3	D+ Ok Cancel
Save Display Clear Info	9+006- 5.32±006

In the history window you will hopefully see:

res_uisplay_linge_posit , u, inoual , imor, imor j
\$# Results successfully stored into Res1
For Help, press F1

Note that it is just the top part of the form you use in the load steps.

Repeat this to load the minimum value into register "res2", this time derive the minimum (P3) princ value from the minimum envelope tensor.

Results Toolbox	Select Results
Result Entities © Node © Scalar © Element C Vector © XYZ C Tensor	44 Loadcases 3-s2 4-s3 12-maxprin_frm_tensor_z1nz2 =
Load Results into Register:	24
Coordinate Frame Derivation: P3 Location: As is	Subcases 2-4 4-1
Calculated Results into Register:	1+ •
Register Assignment Method: = ▼	Results 1.1-Stress Tensor,
Register: Operator: Register: Res2 /▼ Res1	
Use PCL Function (func(\$1, \$2, \$3, \$4, \$5))	D-4 S-(NON-LAYERED)
Calculate	D+
For Results in Register: Res3	D-4 Ok Cancel
Save Display Clear Info	3+006
Ok	

믜	\$# Results successfully stored into Res1	-
	\$# Results successfully stored into Res2	<
	1	_
For	Help, press F1	

Now to calculate the ratio:

This is using the middle part of the form, the bits in red below. As set the "calculate" button will do Res3 = Res2 / Res1

Results Toolbox				
Result Entities				
Node	Scalar	Node List		
C Element	O Vector	Node 1:#		
C XYZ	C Tensor	<u> </u>		
Load Results into Regi	ster:	Res2 ▼		
Coordinate Frame		Derivation:	P3 🔻	
		Location:	Aala 🔻	
<u>1.</u>		Location.	ASIS	
	Load	Result		
	-9-			
Calculated Results into	Register:		Res3 V	
Register Assignment M	ethod:	= 🔻		
Use Operators				
Register:	Operator:	Register:		
Res2 V	/•	Res1 V		
			_	
Use PCL Function				
(func(\$1, \$2, \$3, \$4, \$	5))			
MAX(\$1,\$2)	\sim			
Calculate				
For Results in Register	:	Res3 🔻		
Save	Display	Clear	Info	
		Ok		
			74.3	
S# Results succ	nreni_seq_uerai cessfully stored in	uit_viewpoit) hto Res3 🖌	<	
For Help, press F1				

Now store the ration in "Res3" as a new result. This just uses the bottom part of the form. I created (1) a new loadcase and (2) a new subcase

And specified the result labels I wanted :

Instants rookov	Title
Result Entities	
Node C Scalar Node List Loadcases Interview Int	esui
C Element C Vector Node 1:#	
C XYZ C Tensor	Cancal
13-minprin_frm_tensor_z1nz2	
· · · · · · · · · · · · · · · · · · ·	
Load Results into Register: Res2 V	
Coordinate Frame Derivation: P3 V Create Loadcase	
As is Subcases	
Load Result	
Calculated Deputite into Deputite into Deput	
Calculated results into register.	
Register Assignment Method:	
Register: Operator: Register: Layers	
Res2 V /V Res1 V 1-Z1	
3-Non-Layered	
Use PCL Function	
(tunc(\$1,\$2,\$3,\$4,\$5))	
MAX(\$1,\$2)	
Create Layer	
Calculate Primary Result Label	
priabel1	
rol regults in register.	
Secondary Result Label	
Save Display Clear Info seclabel2	
Ok Cancel	

Form values before the OK:

Results Toolbox] fay	t group Entity		
	1		_		Save Results		
Result Entities Node	Scalar	Nede Liet			Loadcases		
C Element	C Vector	Node List	[p-r	4-s3		*
C XYZ	C Tensor			h 1	12-maxprin_frm_tensor	_z1nz2	_
					15-My ratio result	_211122	E
Load Results into Re	gister:	Res2 🔻			•		•
Coordinate Frame		Derivation:	P3 🔻			Create Loadcase	
		Location:	As Is 🔻		-		
					Subcases		
	Lo	ad Result					Î
Calculated Results in	to Register:		Res3 🔻				-
Register Assignment	Method:	= 🔻					
Use Operators						Create Subcase	
Register:	Operator:	Register:			Layers		
Res2 🔻	/-	Res1 🔻			1-Z1		*
			-		2-Z2 3 Non Lavered		
		1			3-Non-Eayered		
Use PCL Function	1				4		
(func(\$1,\$2,\$3,\$4,	\$5))						
MAX(\$1,\$2)							
		Calculate	1		_	Create Layer	
					Primary Result Label		
For Results in Registe	er:	Res3 🔻			my_label1		
Save	Display	Clear	Info		my_sec_label		
		Ok					Cancel

₽ \$# Results successfully stored into Res3	
\$# Results from Registry 3 successfully written.	<
	_
For Help, press F1	

To see the new result load case, switch out of results to another menu (e.g. Geometry) and back into results (it then reloads the full list of Result cases):



Then you plot this result.